THE UNIVERSITY OF WASHINGTON

Arboretum *bulletin*

SUMMER
1960

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THE UNIVERSITY OF WASHINGTON

Arboretum bulletin

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Summer, 1960

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COVER PHOTO:
Ternstroemia gymnanthera

Continuing the program for our Anniversary Year of refreshing our readers' memories with some of the best of the material presented in the Bulletin in past years there will be found in this issue extracts from articles and notes dealing with various shrubs—lilacs, roses, peonies and others—as well as ferns, ground covers and rock garden plants, with some other items still pertinent.

SHRUBS

Unusual or Outstanding Shrubs and Their Uses in the Garden

THE creation of a beautiful garden depends as much upon the choice of the plants as upon their arrangement, and if interest and enjoyment is to be had throughout the year the trees and shrubs should be selected with care. Attention must be given to the structural form of each kind as well as to the color and individuality of bark and winter leaf-buds. Many of our fruiting and berried shrubs are the more outstanding in winter when they can so easily display their clusters of fruits on leafless stems. Many trees also are more beautiful when denuded of foliage. *Styrax Obassia* is a perfect example. The coarse summer leaves of this tree cover its magnificent structure and its smooth, patterned bark.

The first consideration in planting is soil preparation, but of equal importance are the exposure and the amount of drainage and water the plants require. Since the greatest part of our rainfall is confined to the fall and winter months, many trees and shrubs suffer from summer drought, and, in the case of some berried shrubs, the fruit may wither and drop if ample water is not available to them during this period. If a given shrub thrives best in a dry location, plant it on a slope. If it needs some winter protection, plant it away from low areas and give it ample room for air circulation since dense plantings seem to invite frost and to create an undesirable, stagnant atmosphere.

The following species have been found to require a loamy, deep, rich soil with an abundance of summer moisture. Clay soils that hold the moisture to the extent of being wet or swampy in winter would not be desirable.

Callicarpa dichotoma, the purple beautyberry, is a shrub that can be kept to any desirable size since it needs severe pruning in the early spring. Though it is quite twiggy, it is not too conspicuous during winter. The real beauty and interest come from the bright turquoise berries that follow the small pink flowers in August. The fruits are not large but the tight clusters around the stem at each node are showy and will remain so until frost.

Chimonanthus praecox is a shrub which grows to about six feet in height. It is quite erect in habit. The lanceolate, four to five-inch leaves which unfold early remain a lustrous chartreuse green all through the sea-

son, dropping in the fall without much change in color. The flowers are the most interesting feature. They are yellow with a purple-brown center and make their appearance in January and February. A most delightful fragrance is one of their chief attributes.

Stewartia Pseudo-Camellia is one of the truly outstanding shrubs in that it blooms in August when few shrubs are flowering. The deeply indented leaves unfold quite late and show a wide range of color before dropping in the fall. The large, single, white flowers, with their interestingly toothed edges and hundreds of bright orange stamens, attract attention wherever the shrub is seen.

Styrax Obassia is the largest of the trees mentioned here. After coming to know this tree as I have, I am surprised that it is not planted more often. It exhibits dominating characters at every season and has all the quality and bearing that a specimen plant requires. It develops into a well-formed tree with upsweeping branches which take easy angles from each node and never is there any tendency toward the twigginess of S. *japonica*. The new growth is rough and the bark peels each fall to leave a beautifully patterned, satiny smooth finish of light color. The brown, woolly leaf buds which are developed by fall contribute to the commanding winter effect of the crown. The leaves unfold to the size of a dessert plate and become quite coarse, thus constituting the tree's most undesirable feature. The seven-inch racemes of sweet-scented, waxy-white flowers come in June, to be followed by two-toned green capsules.

Enkianthus cernuus rubens is without a doubt one of the daintiest of June flowering shrubs with neat, never twiggy, ascending branches. The smooth dark green leaves, grouped at the ends of the branchlets, take on the most brilliant colors of yellow and red in the fall. The urn-shaped flowers hang in long panicles beneath the leaves and look like red drops of water, each one clasped by a light green calyx. They last for several weeks.

Koelreuteria paniculata is a large shrub or small tree that becomes interestingly gnarled very early in life. The bipinnate leaves are large and graceful and turn from bronze as they open to a coppery green in midseason, and then to bronzy-yellow as fall advances. The most outstanding feature is the August display of yellow flowers which stand upright in large loose panicles all over the crown.

Photinia arbutifolia produces beautiful clusters of bright red berries which usually remain into the early winter and which recommend it for a place in the border. It is upright in habit with dark green leaves, two inches in length. The white flowers open in June and are followed by small berries which are slow to color and which drop soon after a killing frost. For best results give this plant a warm place where air circulation is good.

Osmanthus ilicifolius (Aquifolium) is a shrub of compact columnar habit with small, glossy leaves which resemble those of the holly. It is a good foundation plant and will stand quite a bit of shade. The creamy-white flowers are borne in loose racemes in the leaf axils. They are delightfully fragrant. Though this particular osmanthus will tolerate considerable shade, it will actually bloom much more freely in the sun.

Ternstroemia gymnanthera (japonica) is an evergreen of truly outstanding beauty. The leaves are thick and lustrous with a margin of red at the base. They are held out horizontally to the branch axis, an arrangement which gives a pleasing appearance. The new leaves are a glossy bronze. The flowers of the terminal clusters are small, white and very fragrant and are followed by red berries. Give this plant ample light but also provide it with some protection from the midday sun.

Thea sinensis is the tea of commerce. It is a shrub of medium size with deep, dark green leaves which are closely arranged along the branches. The stalkless flowers are borne in the leaf axils. They are white, single, fragrant and always open late in the fall.

Give the tea plant a warm, sheltered position with good drainage.

Zenobia pulverulenta is a small shrub closely related to Pieris, as the short racemes of white, urn-shaped flowers will attest. The bark is rough and peeling. The leaves are narrow, thick, and of a bluish-gray color which gives the shrub a distinctive appearance. Only the severest cold will cause the foliage to drop, but even this does not damage to the stems. The flowers open in June.

MRS. FRANTZ NEHAMMER

(Fall 1945)

Deciduous Trees and Ornamental Shrubs

AS a boy back in southern Sweden my chums and I had a wonderful tepee-shaped playhouse under a pagoda-like, giant, weeping beech, *Fagus sylvatica pendula.* It was very large, perhaps 20 feet high at the trunk and at least 30 feet across where the branches touched the ground, absolutely private and nearly waterproof and a wonderfully shady retreat in summer. Very few trees have a more distinct and fascinating silhouette, especially so when an occasional limb reaches out horizontally, its decumbent branches for all the world like folds of cloth draped over an arm. This tree needs plenty of space and shrubs planted around it when young should be moved away in order that the lower branches be allowed to creep along the ground. The weeping beech seems to be very little affected by aphids and any well-drained soil will do.

Of late we have again begun planting the empress tree, *Paulownia imperialis,* but it is not enough. This tree is of very rapid growth, flowers nicely even when quite young and does very well in our heavy, wet soils. Here in Seattle garden lovers used to make yearly pilgrimages to see a few large Paulownias in bloom, which gives an idea of how beautiful this tree is. As it matures it seems to slow down so that a tree 15 years old is nearly as large as one 30 or more, only the trunk gets heavier and the flowers more profuse. In spring this is a strikingly handsome tree, covered by lavender, fragrant, bell-shaped flowers just as the leaves appear. The leaves are very large, on the order of the catalpa, with which it may well be used in group plantings.

Up to the last few years the dove tree, *Davidia involucrata,* has been hard to procure, but now one can find young trees in several nurseries so we should get better acquainted. It is a showy tree when in bloom and quite distinctive at any time, in a general way resembling a linden. The flowers are inconspicuous but the large, creamy-white bracts, one of them six inches or so long, the other shorter, make the dove tree most entrancing and when stirred by a slight wind it seems to be full of fluttering, white birds. No disease or pest has so far made its appearance and this tree seems to have no other soil requirements than good drainage.

Franklinia alatamaha has not only a very interesting history—it was introduced in gardens in the East in the 18th century and then never rediscovered in the wild state—but it is also a most outstanding ornamental tree. Its single white camellia-like flowers come late in September and the foliage colors well and is quite persistent, something like our native dogwood which it resembles in general appearance. It grows about 25 feet high, likes a peaty, boggy soil and seems to do very well around Puget Sound. (fig. 5)

Silver-bell, *Halesia tetraptera, or carolina,* should be used more in our gardens as it is very pretty when in bloom and colors well in autumn. It also lends itself to planting underneath other taller trees as an undergrowth as it does not mind shade, and requires only a light, well-drained soil to be perfectly happy.

Quite a different feeling in the landscape is introduced by *Albizzia julibrissin rosea,* a pink acacia indeed that at once gives a feel-

ing of the hot, dry places where its relatives dwell. It is, however, completely hardy here and in addition to its attractive acacia-like foliage and its spreading, flat silhouette is clothed in late summer with a shower of pink fuzzy flowers that come in clusters on the top of the foliage.

The Chinese varnish tree, *Koelreuteria paniculata,* is not seen very often either, but as it grows and blooms well here, why not? When in August the tall panicles of yellow and brown flowers appear it is truly a sight. The pods that follow are also notable as they are quite persistent and color a bright red or brown. Together with the golden compound leaves, they draw attention anywhere in the autumn landscape. The tree itself is rather dome-shaped and resembles somewhat a staghorn sumac, in a grouping of which it would seem perfectly at home. If possible it should be planted in full sunlight and in well-drained rich soil.

Clerodendron trichotomum, a small tree 15-20 feet high, is useful chiefly because it flowers late in summer or early fall. It is a beautiful tree with its large leaves and is covered with white or blush flowers reminding one of gay perennial phlox. It is very fragrant and later in the season shows up with the most ornamental dark red calyx in which nest four turquoise-colored seeds that are the joy of every woman who likes to make arrangements of berries and autumn foliage. The tree is best suited to open sunny locations with plenty of rich soil, well-drained.

Redbuds, *Cercis canadensis* and *chinensis,* are a couple of small trees of the pea family that we should meet more frequently. They grow about 18 to 20 feet high with a rounded head. The leaves are heart-shaped. The flowers, rose-pink and rose-purple, are clustered in the leaf scars on the stems and as they bloom on bare twigs the trees appear to be literally smothered in color. These trees seem to be free from all pests and grow very well in ordinary light upland soil, provided the drainage is good. They like plenty of sunlight.

I have seen only two medlar trees, *Mespilus germanica,* in the Northwest. This tree reminds one somewhat of a Bechtel crab, but the flowers are single, pale pink, about two inches across, and appear among the foliage. The fruit is a yellow, later brown, pome that is attractive and when touched by frost is edible with an agreeable acid taste. It seems to do well in any soil.

We are all well acquainted with the pink-flowering dogwood, *Cornus florida rubra,* but I would like to put in a good word for *C. florida, C. Kousa* and *C. mas. C. florida,* the eastern dogwood, while it cannot compare with our own native dogwood, *C. Nuttallii,* nevertheless has a charm that makes it very desirable from a landscape man's point of view. It can also take the place of our native dogwood in localities where heavy soil conditions make it impossible to grow the latter successfully and also in localities east of the Cascades where the temperature excludes *C. Nuttallii. C. Kousa,* the Asiatic form of our flowering dogwood, is very delightful. Its flowers, though not quite as large as those of the native species, have a daintier shape so to speak and the tree itself is extremely graceful. The blooms appear in June and fill quite a gap when, after the glory of the cherries and crabs, etc., we really need a lift. It likes a rich light loam and does not mind shade if not too dense. *C. mas,* with its minute yellow flowers in whorls on the bare twigs, presents quite a striking picture and later when the large berries appear (they are good to eat, too) this small tree is very attractive indeed. It rather prefers a heavy rich soil.

Among rather recent, worth-while introductions of flowering shrubs in the Pacific Northwest, I would like to call attention to *Corylopsis spicata.* It is a most delightful plant that looks like a hazel or young elm and grows about four feet high. In early spring before the leaves appear it is covered with graceful pale-yellow bells about ¾ inch long. These and the exquisite form of the plant itself give it the ethereal beauty of a playing golden fountain. From my own ex-

perience the shrub does very well in light, well-drained soil with some old manure. It is perfectly hardy and likes a fairly sunny place.

Eucryphia glutinosa (pinnatifolia) is another newcomer that deserves to become familiar to us. It is a shrub with foliage clustered at the ends of the branches, large white single flowers and yellow stamens, two to three inches across. It blooms in the middle of the summer and should have a soil free of acid. It seems perfectly hardy here as it stood last year's severe winter quite well.

While not as showy perhaps as the well-known *Ceanothus* 'Gloire de Versailles' and *C.* 'Marie Simon,' some of the native ceanothus of California, *C. thyrsiflorus* and *C. cuneatus,* are also very ornamental and well worth growing. Their pale blue spikes of flowers appearing from early to late summer are most attractive and unusual. They are evergreen and even out of bloom the plants are decorative. As they are in the nursery trade we should use them frequently. Like all ceanothus they like sunny exposed positions in soil that is light but rich in humus and with perfect drainage.

Some years ago I found *Dipelta floribunda* in a local nursery under the name of *Clerodendron* something or other. It is a very fascinating large shrub with bark that peels off like Kolkwitzia, to which it is closely related. It grows 10 to 12 feet high, the leaves somewhat like weigela, which it resembles in general appearance. The flowers are flesh-pink, 1½ inches long, with golden throats and produced in great profusion in June. It does well in heavy rich soil and stands pruning well.

The pomegranate, *Punica Granatum,* in our climate can be considered only as a shrub, but it is well worth growing even if it does not produce any fruit. It flowers here all through the summer when we have so few

BELOW:

Franklinia alatamaha

FIG. 5 PHOTO BY: WM. ENG

blooms on shrubs. It has a pleasing form also. The flowers are two to three inches across, appear all over the shrub in the leaf axils, brilliant scarlet with a dark red calyx. There are varieties that have striped pink and red, yellow or white flowers. The pomegranate prefers a light soil and plenty of sunshine.

The crape myrtle, *Lagerstroemia indica,* is closely related to the pomegranate but does not resemble it very much. Around Seattle it blooms during September and if the weather is rainy the large panicles of flowers often break the branches, due to added weight of water. The flowers are pink, about an inch across, extremely attractive and appear in such a way that the tips of the branches seem to be all in bloom. It should be pruned heavily every spring to prevent legginess and likes a moist rich soil with abundant sunshine.

Stewartia pentagyna var. *grandiflora,* appears to be the only one of its genus that the nursery trade is interested in, though I am quite sure the other species are hardy here. It is a most outstanding garden plant when covered by the large white flowers with purple stamens. Its bright green, thick leaves change to flaming orange and scarlet in autumn. This is truly a magnificent shrub in all respects. It loves a light but rich soil and a warm sunny place to be at its best.

OTTO E. HOLMDAHL
(December 1943)

Notes on Various Sumacs

RHUS is a large and varied genus of some 120 members, of which 40 are called "Sumac," and 13 of these are native to the United States. Perhaps the best known to people who have lived in the East and Middle West are *Rhus glabra,* the smooth sumac, whose leaves are somewhat glaucous and whitened beneath, and *R. typhina,* the staghorn sumac, with its irregular branches suggesting the name.

The black sheep of the family is *R. Toxicodendron,* the poison ivy, which many people have met to their sorrow. The berries of this sumac are white, as are those of other poisonous varieties; poison oak, *R. quercifolia,* and poison sumac, *R. vernix.*

The coral sumac, *R. metopium,* has orange fruit but the poison is contained in the milky, resinous juice. This is also true of the Japanese lacquer or varnish tree, *R. verniciflua,* which is rarely planted in this country because of its poisonous properties. It is the source of black lacquer which is used on wooden bowls and trays.

The dried and ground leaves of several varieties are much used for tanning light-colored leathers, and to some extent for dyeing. In the United States, particularly in Virginia, the leaves of several wild sumacs are gathered for tan-stock. In the southern states the tannin content is 10 to 25 per cent higher.

The wood of *R. typhina* is satiny yellow streaked with green, and is occasionally used for inlaying. This sumac reaches a height of thirty feet. *R. integrifolia* is the mahogany of Lower California.

The laurel sumac, *R. laurina,* is a large, evergreen, much-branched and very leafy shrub, exhaling an aromatic odor. This and *R. integrifolia* form dense, smooth thickets on the hillsides and about the sand dunes of Southern California, and the latter furnishes "Indian Lemonade" for the small boys of that locality.

The Canadian sumac, *R. aromatica canadensis,* is found from Canada southward. Its leaves when crushed are pleasantly scented, those of the western species, *R. trilobata,* unpleasantly. The Indians make a palatable drink of the berries of *R. trilobata,* and the split stems are used in basket making.

R. Cotinus, the smoke tree, is a native of southern Europe, and is cultivated elsewhere for ornament. Most of the flowers are abortive, and the panicle develops into a light,

feathery or cloud-like mass, of a green or reddish color. It is known also as fringe tree or wig tree.

GLADYS TROUTMAN
(December 1943)

Tree Peonies

TREE peonies, like herbaceous peonies, require perfect drainage and prefer a lime soil. Unlike herbaceous peonies, which must have full sun, tree peonies benefit by partial shade. They are woodland plants in their wild home in the Chinese mountains.

No details are known about their fertilizer requirements. The plants grow well in any well-drained soil. The Japanese are reported to feed them with fish but the Japanese soils and conditions are so different from ours that this is hardly a guide to us to use high nitrogen fertilizers. The best season for planting is from late September to early November.

JOHN C. WISTER
(Spring 1954)

Tree peonies need very little pruning. Shape the bush as necessity demands and cut back any dead or weak growth.

Tree peonies, like the herbaceous kinds, are quite free from disease although in wet seasons they may be attacked by botrytis fungus. If new shoots suddenly wilt and fall over, if buds turn black and dry up, or if some of the leaves show brown, irregular spots, the botrytis blight is present. Remove all diseased growths at once and disinfect the pruning shears after each cut is made. Gather up and burn all dead leaves in autumn as an extra precaution. Also sprinkle a handful of Bordeaux mixture around the base of each plant in early spring.

MRS. EDWIN J. STRANCE
(September 1942)

I do not fertilize except for a light application of bone meal about every two years scattered around the plant in the early spring. Rather than fertilizing, I prefer to move the plants in the early fall every three or four years. Invariably they seem to thrive under moving.

D.G.G.
(Summer 1948)

The Hardier Ceanothus

The large ceanothus clan is still wild enough to be set in its ways. The majority of species insist on summer drought and though some enjoy the snows of high mountains not many will take the continual wet of the open winter. Those from altitude do not easily accept coastal conditions, those from near desert ranges object to moist air, and those from California's shoreline and southern valleys buck at cold, lingering dampness. This leaves the Northwest with a limited choice of cocksure successes but ample opportunity to experiment with some glorious blue ceanothus species and varieties from the south. With these the challenge will be to corner all the winter sun possible, and through the use of rock, bank and light soil, insure drainage so perfect that no water can linger around the bole.

LESTER ROWNTREE
(Summer 1954)

Davidia involucrata

China has donated to the gardens of Europe and America many beautiful and ornamental flowering plants among which is the 'Dove Tree,' *Davidia involucrata*. The first trip to China made by Dr. E. H. Wilson in 1899 was mainly for the purpose of collecting seed of this tree.

The tree is extremely rare in cultivation in the United States. The propagation of the tree has not been especially easy except from seed. Branches near enough to the ground root from layers quite readily but these are only produced from a tree which has been killed to the ground or deliberately cut down. Cuttings have always been difficult to root. By far the easiest and most successful method is from seed, planted as soon as ripe in the late fall. The fruits are about the size of a black walnut and are surrounded with a similar hard fleshy pulp. This should be removed, before planting, with the help of an old knife. For some years I was under the impression that they would not germinate unless subjected to freezing but I have since

(Continued on Page 66)

FERNS

Some Ferns and Their Uses

WOODLAND gardening is a wave which is gathering force and bids fair to leave some impress on our plantings. I choose to think that the exigencies of our times and the complication of our activities induce us to seek a more simple picture for our rest and recreation. It is true that no other form of gardening can so safely be left to its own devices for short periods as a natural wilderness. Another advantage: it permits a close planting which eliminates undesired weeds to some extent.

If the area for a little wild gardening is wide enough we might start with a tree, one whose roots go directly down and do not spread about—a pine or magnolia, for instance. If that cannot be encompassed, a broad-leaved shrub, rhododendron or sourwood, might serve as an accenting mark. Ferns, in great measure the ground covering from the dark northern forests to the jungles of the tropic lands, will do much, and with a minimum of labor, to dress up our unconsidered nooks.

One of our handsomest ferns, bold in design, of rich dark green, is the common sword fern. *Polystichum munitum*. This may be the dominating plant in a difficult narrow bed on the north side of the house or the background planting of a wider area.

The Vancouver fern, *Polystichum Andersonii,* is found over a wide area—from Alaska to northern California—but never in any great numbers together. The fronds develop around a central crown and curve elegantly backward.

The giant chain fern, *Woodwardia radicans,* is very common on the small and large stream banks of northern California. It does occur in a few isolated spots in Washington and Oregon and grows exceedingly well here. It reaches a height of five feet or more—a coarsely cut fern that is very decorative.

In any large piece of natural woodland we usually have crumbling stumps and rotted logs. It is a great mistake to burn or eradicate these ancients. On them can be found little gardens of mosses, lichens, huckleberries of all kinds, lovely single-beauty, *Moneses uniflora,* and many other things. A gray and shredded stump is the most beautiful background for lady's-slippers or a proud fern. In such mold we often find the triangular wood fern, *Dryopteris spinulosa* var. *dilatata*.

One of the pleasures of trips to the mountains is the sight of the little oak fern, *Dryopteris Linnaeana,* an unbroken pattern extending back into the forest growth as far as eye can penetrate, pale with sunlight near the road and darker green with shade. It increases by running root stocks and in time spreads pleasantly about.

A fern that will grow on a shaded clay bank, on old logs or beside small streams is the deer fern, *Struthiopteris spicant*. It usually forms a flat, plate-like rosette, the leaves rather spongy. The fruiting fronds are sent up from the center and often reach to twenty inches.

For a shady spot in the rock garden the maidenhair spleenwort, *Asplenium trichomanes,* is a very tidy little fern. It reaches little more than eight inches in height. Two other easy ferns for the rock garden are the Oregon cliff-brake, *Cheilanthes densa,* and the parsley fern, *Cryptogramma acrostichoides*. The first is a brittle, shining green; the second softer in texture.

Ferns alone present a finished and restrained planting. They may be enlivened by the introduction of other small woodlanders. A fault that should be avoided like a pest is the spotted effect. A dozen trilliums, for instance, should be planted in a group or two at most. Clumps should be striven for rather than spatterings. The fine foliage of Vancouveria or the smaller epimediums work into the picture well; Coptis, lady's-slippers,

(Continued on Page 66)

ROCK PLANTS

Rock Gardening with Native Alpines

FIRST in the category of showiest and easiest to grow among our wild alpines are the penstemons. They range in size from the pygmy *P. humilis,* in prostrate evergreen mats, up to *P. fruticosus,* a shrubby variety which will grow to four feet in diameter and two feet in height. In the higher altitudes the more diminutive and sprawling varieties are found. Such types as *P. Menziesii* and other dwarfs could be reserved for the miniature section of your alpine garden. Perhaps the showiest of this family, which runs mostly to the brilliant blues and lilac colors, is *P. rupicola,* the flaming crimson flowered one found mostly on sheer cliffs. The penstemons should be laid down with flat rocks over their roots in the sunniest part of your garden, and the mat varieties like to drape out over rocks or hang from a crevice.

Cassiope Mertensiana, the lovely white heather, is successful if taken up in small sods of the mountain peat in which it grows. The so-called pine heather, *Phyllodoce empetriformis,* can also be moved in sods. *Gentiana calycosa* likes moisture and sun. Some sods of the little golden *Potentilla flabellifolia* make a good combination for the gentian. After blooming, only light watering is needed for both of these.

While the alliums, brodiaeas, fritillarias and others of the lily family are not exactly alpines, they are most appropriate in a rock garden and add color and interest to it in early spring. The little yellow erythronium from about 2000 feet transplants well. A drift of it, combined with the small, purple-flowered sisyrinchium in a sheltered nook, makes a thrilling sight and puts compatibles together for they both like to dry down after blooming. And *Erythronium giganteum,* with its handsome brown-spotted leaves and white, nodding flowers rising in a little bower of delicate ferns, makes a picture of cool elegance.

Our wild irises from east of the Cascades come in varied hues of purples, pale lilac and silvery blues. They grow mostly in peaty soils. One from hillsides along the Pacific Coast is a dwarf with deep purple flowers.

Ross and Leota Gill

(Summer 1946)

Rhododendrons for the Rock Garden

FROM the alpine parts of China, India, Tibet, Burma and the arctic regions of the world come more than 150 species of handsome little creeping shrublets or dwarf shrubs that attain a growth of approximately one or two feet in height. Because of their size and habits, most of these are excellent plants for the rock garden.

Most of the species suitable for rock garden use belong to some seventeen of the series. These are here discussed, in systematic sequence.

Many of the groups are favored with delightful foliage fragrance. Brushing one's hand across the leaves brings to mind the aromatic essence of sandalwood, camphor and other reminders of the Far East. Even if they did not have flowers, this attribute of fragrance would make them entirely worth growing.

Neriiflorum Series

Most of the members of this group are dwarf, neat, compact, slow-growing and hardy. Typically, their leaves are deep dark green, usually with white or brown indumentum beneath. The flowers in most cases are rather long bell-shaped, and, although there are relatively few in a cluster, they are of generous size and of thick, fleshy texture. The colors range with emphasis toward the brilliant tones, such as yellow, orange, pink, rose, scarlet and deep crimson. Black-crimson and, rarely, white forms are also included.

The Forrestii subseries contains six species:

Rhododendron erastum, R. Forrestii, R. porphyrophyllum, R. pyrrhoanthum, R. repens and *R. serpens*. *R. Forrestii* and *R. repens* are the best known in cultivation.

The Neriiflorum subseries contains six species and four varieties, all of which are desirable plants. For rock garden use four species are especially worthy of mention, namely, *R. neriiflorum, R. floccigerum, R. sperabiloides,* and *R. euchroum.*

Within the Neriiflorum series, the Sanguineum subseries, with about sixteen species and seventeen subseries, is the largest. A very dwarf member, and an especially desirable plant, is *R. aperantum,* a widely spreading shrub, six to twenty inches high with flowers varying in color from white, rose and deep rose, to orange and yellow. *R. dichroanthum* is a most desirable species with orange-flushed, salmon-rose flowers.

Of the red-flowered kinds, *R. sanguineum* is the choicest.

Thomsonii Series

In the Thomsonii series is *R. Williamsianum,* one of the most attractive dwarf species of the genus. It has heart-shaped leaves, beautiful clear, shell-pink flowers and a habit of slow growth, although in time it will reach a height of three feet or more.

CARL S. ENGLISH, JR.

(December 1944)

Shortia, Schizocodon, et al.

SEVERAL of the members of the Diapensiaceae are very well known in the Puget Sound country because of their perfect acclimatization coupled with their inherent charm. The family *Diapensiaceae* is made up of six genera and about ten species, circumpolar in distribution. Most of the members of the family are woodlanders preferring half shade and a cool, acid soil friable enough so that the fingers can easily be forced through it. They are beautiful as ground covers among rhododendrons and for any choice, shaded spot in the rock garden.

Pyxidanthera barbulata (Pixie, Flowering Moss, or Pine Barren Beauty of S. New Jersey) has awl-shaped leaves, tapering from a broadish base to a sharp point. Pyxidanthera is a small evergreen, prostrate, tufted shrub with ascending, often very leafy branches; small, narrow, alternate, overlapping leaves and numerous white or pinkish, stemless flowers, solitary at the ends of the branches. The persistent corolla is short and bell-shaped, with five lobes or parts.

The members of the next genus, Diapensia, are very small, compact, tufted, evergreen, more or less woody perennials, with small, narrow, spatula-shaped leaves and solitary, bell-shaped, five-lobed flowers. There are four species, two of which are found in cultivation.

1. *D. lapponica* was the first plant of the family to be found and named by Linnaeus in 1753, after its discovery in Lapland. It is hardy in Zone 1 and will be found an interesting plant adapted to the alpine rock garden. The dense cushion-like tufts, one to three inches high, are studded with white flowers on stout one to two-inch stems.

2. *D. himalaica,* from northern India, is densely tufted, with leaves somewhat sharp-pointed and very short; the flowers are white or rose-red.

3. *D. obovata* var. *asiatica* is found in Japan and is similar to *D. lapponica.*

Galax

Galax aphylla is a beautiful ground cover, especially adapted to use with rhododendrons since it likes the same soils and situations, delighting in shade and in a cool, moist, peaty loam. Early in May, the leaves of *Galax aphylla* are an exquisite yellow-green; in June, more solidly green, and later in the season, when the seed pods are dried and dingy, they turn rosy pink or show rich tones of wine. If they are shaded, however, they remain green.

Schizocodon

Schizocodon comes from Greek words which mean "cut" and "bell," referring to the fringed corolla. The members of the genus are glabrous perennial herbs, with the leaves all ap-

parently coming from the root and borne on rather long leaf-stalks, developing an egg-shaped and rounded outline. The flowers, few in number at the top of a scape, are nodding and funnel-shaped with five lobes or petals, which latter are fringed and overlapping, appearing as if cut straight across the top. It should be planted in a mixture of sand and leaf mold in partial shade in the ericaceous bed. The best-known species is *S. soldanelloides* (Fringe Bells), the Rock-Mirror of Japan, a pretty alpine with rosy flowers, fringed like the well-known Soldanella of the Alps.

Shortia

Shortias are attractive, evergreen, stemless herbs with creeping root-stocks. They form carpets of leathery, oval to almost round, heart-shaped leaves with bell-shaped, nodding flowers, which are borne solitary, on slender, leafless scapes. There are two species and several forms, which in appearance resemble Galax.

Shortia uniflora, the Japanese Rock-fan, has hard, glossy leaves which take on good color in autumn. Its large, soft-pink flowers appear in April. The leaves are wavy and toothed, while those of *S. galacifolia* are wavy-edged and toothed. Shortia plants are much easier to grow than Schizocodon.

S. uniflora grandiflora is a much larger form than the species, even to the pink, crimped-edged flowers which may become 1½ inches in diameter. The flowers are very freely produced in early spring during March and April. *S. uniflora grandiflora alba* is a white variant of the above.

S. galacifolia, while not as showy as the former species, is a most delightful little plant which has been divided many times in the years since we acquired it, and, until recently, has had no special treatment other than a shaded, well-drained position on a slight incline. We have since brought it out into the open and have worked lots of peat into our sandy soil.

RUTH N. WHEELON
(Spring 1945)

The Shrubby Penstemon Gardens

The Arboretum really has had no rock garden (though the bones were there) since before World War II when a ten acre tract was planned and partially planted at the south end of the Arboretum, where Arboretum Drive North merges with Lake Washington Boulevard. The rock is of volcanic origin which came from the vicinity of Enumclaw and is the same used for building the Stone Cottage across the road, and in Rhododendron Glen. The rock placement was expertly and artistically done with steep south and west facing cliffs, slopes, small and large rock outcrops—in fact everything necessary for an ideal alpine garden with two exceptions. The first was the soil, a sticky yellow-brown clay slow of drainage and difficult to work, the second, lack of man-power so essential to the care of such an area. Until last year it appeared little would ever be done to make this promising area reveal its full potentials.

In the summer of 1958 Mr. Ralph Bennett, President of the American Penstemon Society, visited this area, collecting wild penstemon and visiting gardens of other penstemon enthusiasts. During his stay in Seattle and vicinity he was struck by the variation in the shrubby members of this genus, most of which do so well here, and wished that there was one large garden where all could be grown together for study and display. This same thought had occurred to several local Penstemon Society members who naturally felt such a garden should be located in the Arboretum. The rock garden would be the ideal site for this endeavor but how could it be maintained once it was planted? The answer to that problem çame shortly when the Mountaineers Unit No. 32 volunteered their services and for the past year have done yeoman work caring for the area. The Penstemon Society contributed a small sum for upkeep and maintenance while individual members in the northwest donated over 100 small to medium-sized plants. The

(Continued on Page 72)

GROUND COVERS

MANY years ago, when I was a young gardener, I used to love the sight of rich brown mold surrounding my plants. In my first meeting with Mr. Holmdahl he quickly and firmly corrected this idea. He declared that there was nothing beautiful about plants standing like isolated islands in a sea of earth and soon I brought myself around to more naturalistic plantings where the competition among plants is keen while they are of benefit to each other in keeping the ground shaded and cool.

I like to consider ground covers in a broad way—anything that grows under other plants and casts a shade close to the stems and trunks. This enables me to "stack" my plants so I can have a series of ground covers, one under the other. In this paper I shall consider only the last series, very close-to-the-ground plants, both evergreen and deciduous.

The small Gaultherias give me great pleasure. If I could have only one I should choose *Gaultheria Miqueliana.* It is completely prostrate; there is something about the oval leathery leaves, deeply reticulated, that is most appealing. The plant becomes a dark crimson mat in fall. The flowers are small waxy urns and the fruit a delicious large white berry. A newcomer in my garden is *Gaultheria depressa,* a little upright bush of a few inches, the branches thickly beset with small rounded leaves, toothed on the margin, and very glossy. The fruits are white. Somewhat similar, but with larger and arching branches that soon become a thicket, is *Gaultheria antipoda. Gaultheria nummularioides* is a creeper that sends out long branches, the pale leaves exactly set and clothing the ruddy hairy stems. It is very beautiful. There are many other valuable gaultherias, most of them somewhat taller. As a group they like a little shade and a mildly acid soil. They respond to a mulch of peat or sphagnum but are easily killed by too much kindness in the shape of strong fertilizers.

Some of the low-growing Vacciniums are beautiful ground covers. The European species, *Vaccinium Vitis-idaea,* does well in full exposure; the branches are upright, the leaves dark green. It is a most valuable and accommodating plant. From the mountains of Alaska I have *Vaccinium Vitis-idaea* var. *minus.* It is upright also but smaller in all its parts. It sets an abundance of scarlet fruit. A beautiful deciduous creeping Vaccinium is *V. uliginosum.* The leaves are soft blue-green; the flowers pink and the fruit dark blue with a bloom. Even the bare sprawling branches are decorative. All the Vacciniums like an acid soil and do very well in sphagnum without any soil.

Leucothoe Keiskei . . . is one of the most elegant of ground covers. But a few inches high, its branches curve gracefully. The stems are zig-zag and crimson; the leaves long and tapering to a beautiful "drip-point" and very glossy. The three-quarter-inch long bells are carried in a surprisingly long and full raceme. Its close relative, *Leucothoe Davisiae,* is a much taller, more bushy plant but very nice where space allows. The flowers come in stiff racemes and they and the succeeding bright brown capsules make the plant very picturesque.

As a ground cover in a bog the European *Loiseleuria procumbens* makes wonderful show. The American *Loiseleuria procumbens* is a more close and perfectly flat plant with slightly broader leaves and in my situation is very chary of bloom.

Pernettya, Comber's species, is a dark forest-green mound set off by rosy bells and red fruit. It is a beautiful cover and not at all common.

The bi-generic hybrid, Gaulthettya, is a very decorative bush with dark toothed leaves. The stems and very abundant flowers are glistening with glands. The fruit is dark crimson to almost black.

All easterners love trailing arbutus, *Epigaea repens,* which in this climate is not too amenable. A beautiful species from Asia, *Epigaea asiatica,* is a much better doer and no less attractive. The leaves are hairy with some purple-rose color in the foliage; the flowers have longer tubes and are a bright carmine pink.

Many of the heaths and heathers are creepers and also some of the rhododendrons. Nothing could be more prostrate than *R. chrysanthum, R. repens, R. radicans* and *R. prostratum,* and a form of *R. Williamsianum.* Quite in the ground cover class and only a little more bush-like are *R. keleticum, R. cosmetum, R. fragariflorum* and *R. chamaeunum.*

Among the deciduous ground covers that give me a great thrill every springtime are the small deciduous bulbs that burst into bloom so suddenly, and all the varieties of *Anemone nemorosa.* These bloom in patches and drifts throughout the garden for a short space of time and when they are gone I realize a season has passed.

But I could ramble on and on about deciduous ground covers for among them are also ferns and woodland herbs. But that is another story.

ELSE M. FRYE
(Fall 1947)

HERBACEOUS

Culture of the Blue Poppy

THE SEEDS of *Meconopsis betonicifolia* (var. *Baileyi*) should be sown in late summer or early fall, as soon as they have ripened, in soil consisting of equal parts of leaf mold, peat moss and sand. The medium should be kept moist and should be shaded at all times against bright sun. The seed should germinate within two or three weeks.

The soil in which they should be planted should be a good type of garden loam. It should be prepared to a depth of twenty inches.

In my garden the ideal location is on the east side of a brick wall, where the plants are protected against the hot afternoon sun. The area must permit of a reasonably good, although not necessarily sharp drainage.

PERRY B. TRUAX
(July 1941)

Alstroemeria, the Peruvian Lily

THE culture of . . . hardier alstroemerias is very simple. The tubers are dormant immediately after the tops die down. At this time they can be planted with a fair degree of success. Select a sunny, sheltered location where they may grow undisturbed over a period of years as they very much resent being molested. In fact, transplanting them after they are once established is usually fatal. Their tuberous roots ramify so deeply into the soil that it is almost an impossibility to dig them without severe mangling. Plant them 6 to 8 inches deep in soil well enriched with humus, leaf mold or barnyard fertilizer. It should be friable, well drained, and yet should be capable of holding an ample supply of moisture until after their blooming season during the last of June and into July. If the soil is a sandy loam and inclined to become dry and hot it would be beneficial to mulch the surface. A top dressing of commercial fertilizer, not too high in nitrogen content, may be worked into the top soil during the fall after the tops have been removed. So far they seem to be quite free from disease, although they must be guarded against the ravages of slugs and snails, which eat out the tender growing tip of the stem.

HARRY L. STINSON
(June 1944)

ROSES

He Who Plants a Rose Plants Beauty

BECAUSE of its adaptability, wide variety of beauty, color and perfume, its range from low bush to tallest climber, the rose offers the gardener a wealth of material that has kept pace with progress.

Roses deserve all the advantages we can supply them, such as planting in full sunshine, soil enriched with humus and manures and plenty of water in the growing season. One can fertilize satisfactorily either by application of fresh cow manure on the surface right after pruning (supplemented with a handful of phosphate and another of potash for each plant, all watered into and eventually spaded into the top soil) or by a judicious use of commercial chemical fertilizing agents. Newly planted roses should not be fertilized for their first year. It is wise to be careful of overfeeding the rose plant with chemicals. Given some reasonable care on warding off the aphis and chewing insects, no plant is more generous with its lovely blooms than is the rose. One can find a rose suited to every person and to every situation, even the shady nook.

Near perfection can be attained with practically every rose in our Puget Sound climate with the exception of the more tender teas and those with a high count of petals. These need more heat to do their best.

A new contender for popularity in the decorative classes is the newer polyantha rose—at times called floribundas.

EARL WILLIAM BENBOW
(March 1942)

The Culture of Roses

IN selecting a place to plant roses, endeavor to find a location which will have full exposure to the sun. However, they will thrive if only half of the day's sun is available. Do not plant under or near large trees or vigorous shrubs, the roots of which will reach out and rob the roses of both food and water. A heavy soil is better than a light one yet heavy clay or hardpan will have to be lightened by the addition of leaf mold, straw, manure, compost, or peat moss. A loamy soil is ideal for most varieties and when the top soil is of this character little preparation is necessary.

Rose bushes of moderate growth may be planted 30 inches apart in rectangular beds with not more than three rows to a bed. In planting, dig the holes of sufficient depth and width to accommodate the roots of the bush. Before planting the roots should be examined carefully and any that have been broken or marred should be trimmed off. Extra long roots should also be cut back. In fact, root pruning is very beneficial. No real rich soil or fertilizer should come in direct contact with the roots.

Budded plants should be set with the bud about 2 inches below the surface and the soil sifted or settled among the roots and gently but firmly packed in. The surface soil should be loose to a depth of one inch.

Choose a time when the soil will break up easily and is not too wet and soggy. Light sandy or gravelly soils will require the addition of material which will retain moisture and plant food. In such soils it is better when the trouble and expense is not a deterrent to dig out a trench the required size and fill in with soil material as before recommended.

Some gardeners in planting rose bushes build a conical mound in the hole where the bush is to be planted, set the bush on top and spread the roots carefully over the mound and fill in the soil among the roots. When the soil is quite dry it is well to settle

it with water. Puddling the rose roots is also resorted to.

At times the gardener will receive dormant bushes in a wilted or dry condition; the bark may even be wrinkled. Plants in this condition will be benefited by complete burial in a shallow trench in moist soil for a period of several days or even a week. When the tender shoots appear after pruning in the spring spraying should be resorted to with caution. If aphis and white flies become bothersome a spray of soap suds and nicotine will destroy them. Dissolve one ounce of the soap in one gallon of water and add one tablespoonful of Black Leaf 40 to the solution. Keep the spray material agitated so that there will be no strong dregs in the bottom of the can to injure the foliage.

A dust mixture which is inexpensive and most effectual against black spot and mildew and which also acts as a deterrent against all of the insects is made of nine parts of flowers of sulphur and one part of powdered arsenate of lead. Proper irrigation and constant cultivation will do much to keep down the pests. Do not irrigate or sprinkle rose bushes in the evening. One good soaking of the rose beds each week is far better than a sprinkling every day. Sprinkling the foliage and blooms spoils the flowers.

Ramblers like Dr. Van Fleet should be pruned immediately after flowering. All wood that has produced blooms should be cut clear back to the base in order to provide room for the new canes. Hybrid tea climbers need careful treatment. After they become established bend the canes to a horizontal position in order to encourage the buds to grow. Exceedingly long canes may be shortened and the lateral branches cut clear back to the base to encourage new growth. Shrub roses like Austrian Copper should not be pruned except for general appearance and for removal of dead wood. If you would have fine blooms, disbudding must be resorted to.

Cut the blooms in the early morning or in the evening and immerse the stems in water immediately. Blooms cut in the sunshine, unless removed to a cool, shady place, will surely wither.

H. L. Collier

(June 1944)

Fall Care of Roses

THERE is always a tendency when fall comes to forget about the roses. Some of the most beautiful blooms of the year appear in late autumn. It is then that they have their superb color, fragrance and form and with proper care your rose beds and bushes will produce a great many of these exceptional blooms.

Late summer watering is of great importance. Rose beds should now be flooded with water. Scatter around each bush a good handful of superphosphate along with a handful of sulphate of potash. The combination of these two will serve as a tonic to harden up the bushes so that they will be in a healthy, mature condition to withstand winter weather. No nitrates of any kind should be used in fall since they would increase plant growth.

Simplified and abbreviated, the procedure (fall care) is as follows: A. First clean up all dead leaves. B. Hoe the rose beds quite deeply. C. Water the beds heavily; in fact they should be flooded. D. Scatter a good handful of superphosphate and one of sulphate of potash around each bush. E. On the following day hoe in the phosphate and potash and lightly water the beds. F. Twice a week the beds should then be watered until the bushes discontinue producing blooms.

By observing your rose bushes carefully in the fall you can determine whether or not you have been spraying properly. Most spray materials contain two things that are injurious to rose leaves; the oil which is used as a spreader and the copper solution which is used to prevent the growth of fungi. The use of either in too large an amount will

gradually burn and dry up the leaves and greatly weaken if not eventually kill the bush. It would be well to mark such plants. When the next season comes you can give them a lighter treatment.

Late in the fall all leaves should be removed from the beds. The extra long branches should be cut back just enough so that they will not become wind blown during the winter. It is well, at the end of the fall season, to spray all bushes and the ground around them with lime and sulphur. Pack the dirt around the bushes by stamping it with your feet. This will help keep the frost from penetrating too deeply into the soil and will also give the roots a solid footing.

GALE S. ROBINSON
(September 1942)

Rose Species I

IT is well first to have some conception of the size of the genus *Rosa* and the extent of the area which it covers. The number of known species has varied greatly with the views of different botanists as to what precisely constitutes a species, but taking a conservative view 125-130 may be distinguished and recognized. Of these approximately 90-100 are Asiatic—western China is one of the chief centers of dispersal. About 20 are North American, of which only some half dozen occur west of the Rocky Mountains; the remainder chiefly European, with a few outliers in North Africa, Arabia and Abyssinia.

Rosa species can be subdivided into two large groups, five smaller, and seven others with from one to four species in each. The large groups are:

Synstylae. Climbing or trailing roses. Most of these are Asiatic in origin and include such superb climbing shrubs as the Musk Rose, *R. moschata,* and the allied *R. Brunonii* from the Himalaya, the Chinese species *R. Helenae, R. filipes, R. cerasocarpa,* and the bushy, glaucous-leaved *R. Soulieana,* as well as the Japanese *R. multiflora,* so much used for stock purposes, trailing *R. Wichuraiana* with its glossy, semi-evergreen foliage, the European *R. sempervirens* and *R. arvensis* and many more. In this group G. A. Boulenger recognized and described 36 species from Europe, Asia and North Africa; one American species, the Prairie Rose *(R. setigera)* also belongs here.

Cinnamomeae. These are all non-climbing shrubs, though often extending underground shoots. Western China and North America are the two chief centers of distribution. Amongst the best for garden purposes from the former area are *R. Davidii* and the very similar *R. caudata,* the elegant, pink, July-flowering *R. multibracteata, R. Moyesii* with blood-red solitary flowers in June, *R. Sweginzowii* with very bristly stems and rose-pink flowers, and the taller *R. setipoda* with long flask-shaped hips. *R. Wardii* from Tibet has white flowers with a red "eye."

In the U.S.A. are found *R. blanda, R. Woodsii,* with *R. nutkana* and *R. pisocarpa,* both in Washington, and *R. californica,* besides others. A tall and handsome species from the Himalaya is *R. macrophylla,* with exceptionally large bottle-shaped hips, whence also comes *R. Webbiana* with pink flowers, and from Northeast Asia the well-known *R. rugosa.* In Europe (central and southern) grows *R. pendulina (alpina),* as well as the type species of the group, *R. cinnamomea,* very widely spread in nature from central and northern Europe across northern Asia to Manchuria and Saghalin, but not often seen in gardens.

The smaller groups, *Carolinae* and *Gymnocarpae,* are sometimes included with, sometimes separated from *Cinnamomeae.* The former comprises about half a dozen eastern North American species, amongst them *R. virginiana,* a useful plant for informal hedges, *R. carolina, R. nitida, R. foliolosa* from the southern Great Plains region. Roses of the *Gymnocarpae* group are easily distinguished by their habit of shedding the calyx from the ripe fruit. Perhaps the best known, apart from our shade-loving western American

species *R. gymnocarpa,* is the beautiful *R. Willmottiae* from Western China. *R. Beggeriana* is also in cultivation; it is native from Asiatic Turkey through Persia to Central Asia.

Of the smaller groups, one of the most important is *Caninae,* including the European Dog-roses and their relatives. *R. canina* is much used as a stock in Europe. The Sweetbriar *(R. Eglanteria)* and its hybrids with *R. foetida,* the Penzance Briars, is frequently grown in gardens. Others such as *R. villosa,* the Apple rose, *R. britzensis* from Kurdistan, *R. rubrifolia* and the dwarfer *R. Serafinii, R. glutinosa, R. sicula* and *R. ferox,* all from southern Europe and the Mediterranean shores, are well worth cultivating.

The small section *Indicae* (or *Chinenses)* centers on *R. chinensis* and is related to the *Synstylae* in the climbing habit. There are only four species known, of which three come from China, and remaining one, *R. gigantea,* is from Manipur, Burma and southwestern China. The wild *R. chinensis* from Ichang in central China is a vigorous climber but the cultivated China roses are hybrids derived from *R. indica* crossed with *R. gigantea.*

Gallicanae. This group, important as one of the basic parents of many of our present day garden roses, is founded on *R. gallica,* the French rose, found in the wild state from central Europe to Transcaucasia and Armenia. It is the Red Rose of Lancaster in English history.

Of the other related "species" the Damask Rose *(R. damascena)* is probably a simple hybrid from *R. gallica,* and the former crossed with *R. canina* gave rise to *R. alba.* The Cabbage Rose, placed here also, is of more recent and complex hybrid origin.

Pimpinellifoliae. These include some of the smallest of the wild roses in height, flower and leaf size, but by reason of their great adaptability and hardiness are amongst the most useful, especially for dry places and on poor soils.

At least ten species of this group are in cultivation, which include almost if not quite all that are known to belong to it. *R. Primula* from Turkestan, the northern Chinese *R. xanthina* forma *spontanea,* certainly the most spectacular member. The dwarf, suckering *R. spinosissima* and its several varieties—*myriacantha, Ripartii,* and *hispida* for instance—and hybrids, of which *reversa* and *involuta* are examples, is found on sand-dunes in nature. From this and the following species arose the many varieties of Scots Roses between 1793 and 1825. *R. pimpinellifolia* is a taller, mountain plant best known in the variety *altaica.* This is a native of Siberia and the Altai region. Bearing pink flowers are two Chinese species, *R. graciliflora* and *R. Farreri.*

There remain seven small groups with from one to four species in each, most of them very distinct in character, and in various ways usually attractive and interesting. Three of them contain climbing, four non-climbing species. We will deal with the latter first.

Luteae. Only two species are included in this small section. *R. lutea (R. foetida)* called the Austrian Briar but a native of Armenia, northwestern Persia and Kurdistan, and the rare and hard to please *R. hemisphaerica,* the double Sulphur Rose, first brought to Constantinople in the 16th century, but not found in the wild single state until 1834, near Angora in Turkey.

Sericeae. The two species forming this group are immediately distinguished from all other roses by possessing only four instead of five usually white petals to each flower. The first species is *R. sericea* from the Himalaya; it has since been found to extend to southwestern China. The second, much more common in cultivation, is *R. omeiensis,* from western China.

Minutifoliae. This is a very ancient small group from the southwestern United States. They refuse to hybridize with the true roses and hence should probably be considered as a separate genus—*Hesperhodos.*

Microphyllae. Only a single species is known in this group, *R. Roxburghii (R. microphylla*), found in two slightly different varieties, *normalis* and *hirtula,* in both China and Japan.

Banksianae. The Banksian roses are well-known vigorous climbing plants in gardens in warm climates.

Laevigatae. The Cherokee Rose, *R. laevigata,* is the sole member of this section, unless the red-flowered Chinese *R. lucidissima* be admitted as a genuine species and is not a hybrid of *R. indica.* It is not a native of North America but of central and southern China and of Formosa.

Bracteatae. In this, the last group to be mentioned, there are only two species. *R. bracteata,* called the Macartney Rose, is found wild in S.E. China and Formosa, but has become naturalized in the southeastern United States. *R. clinophylla (R. involucrata)* is an Indian species, from Bengal and the Himalaya, from Kashmir in the west to Burma and Assam in the east. It is seldom seen in cultivation, unless in warmer climates. *R. Lyellii,* found in Nepal, is probably a hybrid between this and the Musk Rose, *R. moschata.*

BRIAN O. MULLIGAN
(Spring 1948)

Rose Species II

THE chief requirements for growing most of these wild roses are: (1) a situation which is not water-logged during the winter months, (2) plenty of sunshine and (3) a soil which is not too acid or composed chiefly of leafmold or other humus. So long as drainage is satisfactory and the plants, with a few tolerant exceptions such as the Western American *R. gymnocarpa,* are not overshaded, rose species will grow in many and varied soils and situations, on the lightest sands or the heaviest clays, either with or without natural lime, and with the least possible amount of attention or care. However, it is probable that most prefer a soil heavy rather than light, containing a small amount of calcium; certainly the majority appreciate and benefit by pruning when necessary and a regular application of fertilizer every spring, with compost or some other form of humus spread over their roots area in May if the soil is light and the site becomes very dry in summer.

The best planting time in the Seattle area is from late October until approximately mid-December, with February-March as an alternative period. Pruning does not usually become necessary, except for removal of any dead branches, until the plants have grown to some size; then some of the oldest branches which have borne flowers may, if the bush needs thinning, be cut out during the winter months after the hips (fruits) have lost their beauty, although sufficient young wood must, of course, always remain to provide flowers for next season.

Where space permits, it is desirable to set the larger bush-forming species such as *R. Moyesii, multibracteata, omeiensis* and *setipoda* ten feet apart, which will give them room to show their natural form and habit of growth and allow space to walk between them, at least for some years. Where groups of three or more are to be planted, if placed seven or eight feet apart they will eventually form one large and effective mass. As informal hedges, three to four feet between plants will be adequate, and for the most suitable kinds, such as *R. virginiana, altaica* and *nutkana,* the lesser distance is sufficient. For varieties of *R. spinosissima,* plant eighteen inches apart. The smaller, more compact and less invasive species, including *R. Forrestiana, R. glutinosa, R. sicula, R. arkansana* and *R. gymnocarpa,* should be planted more closely together—about three feet apart—in groups of three, five or more plants, and allowed to merge into one another.

If climbing species are to be planted against a wall or fence, allow fifteen or twenty feet length for each, training the young shoots out carefully to cover the area as fully as possible on each side of the plant. Some of the most vigorous climbers such as *R. Banksiae, R. moschata* and *R. Brunonii* will re-

quire more than this, and hence, if possible, should be so placed as to climb into a tall tree, preferably an evergreen to provide a better background for the flowers in summer.

(See full text for Propagation and a list of species for garden decoration)

BRIAN O. MULLIGAN
(Fall 1948)

It Is Fun to Breed Roses

THE key to methodical hybridization is tied up very closely with the chromosome and its genes, the segmentation of the nuclei of the male and female sex cells, the division and rearrangement of chromosomes, reduction divisions and other phases that are hard for one to grasp clearly unless adapted to that kind of scientific work. This information can be found in those books where it is so written that it applies especially to roses.

Succeeding steps in the production of a new rose are apt to be measured in periods of a year or more, most likely several years each. The breeding of roses is a gamble even with the cards marked. Results are not dependable or predictable.

The following terms are used to designate generations of seedlings: F^1; This is the generation produced by the original cross. If a number of seeds were produced by this cross, you could not expect to raise two seedlings having identical characteristics. F^2; Plants raised from any one of the selfed seedlings of F^1. F^3; Plants raised from any one of the selfed seedlings of F^2.

I sometimes think that chromosomes and their genes could be compared to a large group of ballet dancers, in groups wearing distinctive colored costumes, performing their intricate marches and dances, forming one figure after another and finally coming to rest. The combination of colors and costumes that could be produced in such dances is much like the rearrangement of the genes and chromosomes in the pollen, the ovum, and the fused nuclei.

If you have any inclination to hybridize roses it would be a good idea to start in by planting seeds of chosen varieties, then try to germinate them and raise the seedlings. Having obtained a seedling that promises to be good it is necessary in most cases to safeguard it by taking a dormant eye and budding it on a suitable stock plant where it is more certain to survive and grow into a plant that is strong enough to produce larger flowers and provide a larger amount of material to use in further propagation. This is also necessary because so many seedlings fail to survive the dark days of winter unless budded in this way. The budding can be done as soon as the first bloom has dropped but the material is very small and delicate. A binocular lupe is very useful for this budding but you must remember that your movements are also magnified and must be made slowly.

I like to have the multiflora stock growing in a pot. I like to wrap the pot and exposed soil in a clean cloth, then turn it on its side over a clean piece of white paper, then if the tiny bud accidentally drops it will most likely light on the paper where it can be found and will not be soiled to a damaging degree.

FARIS M. BLAIR
(Fall 1946)

I Like Old Roses

THE old roses offer a fascinating vista far back through the years—the ancient species, Chinas, Damasks, Bourbons, Centifolias, Noisettes, Mosses, Ramblers, Rugosas, Teas, Polyanthus . . . and the big, hardy Hybrid Perpetuals . . . and all the many crosses made by nature and man. What an infinite variety of color, type, perfume and plant habit! True, many are not "ever-blooming," their form might never win a beauty contest, yet they have the charm and fine workmanship of old furniture, tapestry, old paintings, antique jewelry . . . the lavender and old lace of bygone days.

To you, fortunate owners of country homes with acres of ground, old fences, out-of-the-way nooks and corners the old-fashioned roses are at their best.

WILL TILLOTSON
(Summer 1949)

Crab Apples and Roses

THE triangular area immediately north of Lake Washington Boulevard between Miller and Roanoke Streets, about 2½ acres in extent, lying immediately behind the prominent line of poplar trees (*Populus Simonii,* from North China), is a part of the former city dump and now included in the area designated for improvement as a memorial to the late Hugo Winkenwerder, Dean of the College of Forestry from 1912 to 1945. Plants of both Crab Apples *(Malus)* and *Rosa* species and hybrids had been accumulating in the nursery, chiefly raised from seeds received 1945-1947, but some acquired by purchase from nurseries, or from other Botanic Gardens or Arboreta.

The area has been divided up into thirteen beds of irregular sizes and shapes, interspersed by grass paths. Three of them, in the east corner near Miller Street planted 1947-1948, contain our collection of Japanese and Chinese quinces; the remainder are allotted entirely to the crab apples and roses. Each of these two large genera has been subdivided into groups or related species, following Rehder's arrangement in his "Manual of Cultivated Trees and Shrubs" (1940). Most groups occupy one bed, but a few especially larger ones (e.g. Roses of the *Cinnamomeae* section) have been given two beds, and some of the smaller ones in *Rosa* share one.

One species, *R. rugosa*, has been allocated an oval bed in order to display its numerous variations and hybrids. Two beds beside the service road crossing this area contain species of the large and varied *Cinnamomeae* group, one on the west side the climbing, mostly white flowered *Synstylae,* near the Boulevard we have the *Pimpinellifoliae* (including the Scots roses) and the *Caninae* (dog roses). In the center of the whole site are the old-fashioned types—*centifolia,* moss, damask, China and others in three more or less triangular beds. *R. rugosa* is located close to its relatives in the *Cinnamomeae.* With proper care and attention we hope that within a few short years this area will be beautified by a succession of blossom and fruit. Crab apples and early *Rosa* species flowering in May, followed by the bulk of the latter and the older kinds in June and early July; then from August onwards a gradually increasing display of richly colored fruits of all shapes and sizes, lasting well into mid-winter.

Few genera of hardy plants can provide more ornament to gardens than these two, especially in combination, or for a longer period.

BRIAN O. MULLIGAN
(Summer 1950)

Pruning Roses

IN all pruning there are only three reasons for it: 1. As a surgical operation to improve the health; e.g., the removal of branches which are rubbing or crowding the center. 2. To improve the line; e.g., the pruning of the weak side of a tree to balance up the strong side. 3. To improve the quality of the flowers; e.g., the annual cutting back of roses.

By following our three rules, we speed up nature's method; it is done in two distinct operations: 1. Thinning, carried out in early winter after the second frost, when the plants are dormant. 2. Pruning, carried out in late March (except for climbers). The thinning operation to cut out all dead, twiggy and soft growth; to take out any branches which are growing inwards or rubbing.

The actual pruning is done when we are reasonably certain that there will be no more hard frosts; that time in our area is usually about March 15. The ideal shape that the bush or tree rose should have after pruning is that of a vase with an open center and the branches spread out equally round it. This allows the sun and air to get at all parts of the plant and helps to keep down diseases and pests. The only way to prune is to be

guided by the actual growth of the rose. For all bush roses, tree roses, Floribundas and Polyanthas our "Rule of Thumb" is: weak growth (pencil size) cut back to 3 to 4 inches to an outside bud. Medium (forefinger size) cut back to 6 to 7 inches to an outside bud. Strong (thumb size) cut back to 12 to 15 inches to an outside bud. The pruning cut is important and should be made one-fourth inch above the bud and sloping so that excess moisture will drain off.

BRYAN TAYLOR
(Spring 1951)

Rosa rugosa, Its Varieties and Hybrids

There are very few flowering shrubs that can put up such a show of attributes as *Rosa rugosa*. It has given rise to a number of color forms, both double and single, and all are noted for their lovely foliage, dense rounded habit, sweet blooms in clusters, long flowering season and immense hips, golden autumn color and ability to make a fine shrub without pruning.

The species is very prone to hybridization and many crosses have occurred and been made, some good, some indifferent, and some bad. While several of the hybrids have definite garden value, it is the typical varieties, both double and single, which appear to me to fit so well with modern requirements, not the least being their dense, weed-smothering habit. The best garden forms come from the true species.

G. S. THOMAS
(Summer 1942)

THE species, first hybrids, and close forms make an imposing group with high qualities of flower, fruit, scent, and beauty of poise and foliage in the best of them. More admirable plants for public parks and roadside planting I cannot visualize. They are trouble-free and require only an occasional removal of old, spent wood.

G. S. THOMAS
(Summer 1949)

Davidia involucrata

(Continued from Page 52)

discovered that this is entirely unnecessary. If planted in flats or pots of regular potting soil in December, I find they do equally well as when kept during the winter in a cool, light, airy pit house where the temperature ranges most of the time between 32 degrees and 42 degrees Fahrenheit. In spring they are removed to a shaded frame outside for the summer, returning them again to the pit in late fall. There, during the following March or April, the majority of them will germinate, having thus required about fifteen months. They should never be kept continuously in a warm greenhouse after planting nor should the soil be allowed to dry out at any time.

Since 1923 the writer has had the pleasure of raising and disposing of over three hundred plants. Since visiting the Pacific Northwest in 1940 to discover how much at home they appear to be in that temperate climate, over one hundred plants have been sent to that favorable location.

WILLIAM H. JUDD
(September 1944)

Some Ferns and Their Uses

(Continued from Page 53)

violets, shortias, and a great many other things! Above all, foliage must harmonize and withering flowers must be removed promptly.

ELSE M. FRYE
(September 1942)

Soon will the high mid summer pomps come on,
Soon will the musk carnation break and swell,
Soon shall we have gold dusted snapdragon;
Sweet William with his homely cottage smell,
And stocks in fragrant blow;
Roses that down the alleys shine afar,
And open jasmine-muffed lattices
And groups under the dreaming garden trees,
And the full moon and the white evening star.

MATTHEW ARNOLD

LILACS

Enjoy Your Lilacs

IN this country no flower has had a greater popularity than the lilac, as can easily be proven by the number of fine old clumps that are seen growing by the foundations of some of the oldest farm houses in New England and the Middle States. Yes, it has been said that they are as American as apple pie. Many of these old clumps of bushes were once the only bit of color and beauty that found its way into the hard lives of our pioneer settlers, and they are now often the only remaining evidence of an old farmhouse. Generations of gardeners have planted it where they could enjoy its fresh beauty and fragrance each spring.

Lilacs have been cultivated and loved by the people of Europe for nearly 400 years. Their introduction into America was in the early Colonial days at a date said to have been about 1650. The first authentic record was of a planting made in Portsmouth, New Hampshire, in 1750. The lilac is not a native of North America but may be grown with success in all parts of the United States except in the extreme Southern states.

S. vulgaris (common lilac) from Jugo-Slavia, Greece and Bulgaria. *S. Josikaea* from Rumania, Jugo-Slavia, Poland and Czechoslovakia. *S. emodi* from the Himalayas and Afghanistan. *S. amurensis* from southeast Siberia, Korea and Manchuria. *S. pekinensis* from North China. *S. oblata Giraldii, microphylla, persica, Sweginzowii, tomentella, villosa, pubescens* and many others from China. The Persian lilac (which is really Chinese, not Persian) is an old inhabitant of our gardens.

Lilac time is short, even at its best, so why don't we take advantage of the many half-sisters of our common garden lilacs to start the season earlier in the spring and push it later into the summer? In so doing, the season is lengthened for over two months.

Plant your lilacs in any good garden loam that is well drained. They resent wet feet. Pack the soil firmly. Lilacs should be placed in the open as far as possible; never in the shade or close to trees. For best results plant 10 to 15 feet apart to allow for natural spread, air circulation, proper cultivation and admittance of sunshine. Plant 3 to 5 feet apart for hedges; 6 to 10 feet for borders and 10 to 15 feet for specimens. Own rooted plants should be planted at approximately the same or slightly lower depth than they were in the nursery. Deep planting, recommended by some growers, should apply only to grafted stock.

When unpacking new plants, protect them from the wind, sun or frost until planted. It is good to submerge in containers of water or wrap in wet sacks. Failure of the above may result in very slow growth or death of an otherwise healthy bush.

After digging around each plant in the spring, the ground should be worked continually to keep the weeds down and the soil open. The more cultivation the better, but particularly in the spring months. When cultivating, be careful not to dig deep enough to cut or mutilate roots, as this will cause the development of more suckers in addition to destroying the feeder roots. The newly planted lilac often acts as though it were going to die. Give the plant a thorough soaking of water, then keep it well watered the balance of the season. Lilacs are tough and stand much neglect and abuse; even so, good gardeners will want to treat them well.

Give them what they like: 1. Good, well-drained soil. 2. Full exposure to sun. 3. Plenty of space. 4. Yearly, liberal feedings. 5. Occasional liming if your soil is acid. 6. Remove all excessive suckering. 7. Cultivate well but not too deeply. 8. Cut off all faded blooms, just below the truss, imme-

diately after flowering. 9. Remember that large blooms are at all times produced on vigorous young wood. 10. Avoid lopping off the ends of long limbs but prune only to keep the plant open and shapely.

ROY S. LEIGHTON
(June 1944)

Winter Care of Lilacs

IF you have neglected pruning for some time the plant may show a bunchy, crowded, branch effect; if the crown is not kept open and airy, the interior limbs will not develop properly, which will not only make your bush unsightly, but will also serve as a source of infection from disease. A consistent, yearly thinning-out is very much recommended, although heavy pruning is not advised.

To prune best is to do so when your lilac is dormant or without any leaves so that you can see what you are cutting out. The pruning is being done when the sap is flowing downward and painting over the cuts is not as necessary as it is when the operation is done in the spring season. The easiest time to desucker is in the spring when the new shoots are tender. This may be done with a sharp knife, making the cut below the ground level. It is best to remove all but the three or four closest to the trunk.

Blooms small and stunted is usually caused by leaving too much wood in the crown. Thin out by removing whole sections. The "thin-out method" of pruning will also tend to keep the plant blooming all over from top to bottom. Never fear severe pruning on "own rooted" stock, whereas you must never cut out the center trunk of a grafted bush lest you soon find the bush fading badly with nothing left for use in rejuvenating it.

Yellow leaves will always signify soil depletion. If your soil is too acid, work in a little hydrated lime, but do not overdo it. We prefer to mulch our plants with a good barnyard fertilizer at this time of the year (Ed. Note: September). It will make little difference whether it is well rotted or not, the winter rains will eliminate any danger of burning. Straw, sawdust, or peat as a barnyard fertilizer base is to be recommended. In the early spring months, just as growth is commencing, a complete commercial fertilizer may be used. Select one that has a high phosphorus content in relation to nitrogen, which can easily induce too much wood. A proper balance would be, 4% nitrogen, 16% potash, 40% phosphoric acid.

The only reason for premature dropping of leaves is insufficient moisture. The common mistake is to forget about this point when the summer dry months are at hand. A healthy lilac bush generally is little affected with disease. Apply a dormant spray now to avoid spring spraying with the risk of not being able to use a strong enough solution to be effective without burning flower and leaf buds. Should your plants have been infested this year with disease, be sure to rake up the leaves and destroy them by burning.

Where certain varieties fail to produce young growths, we must watch carefully over our pruning lest we undo in a few moments that which has taken months to produce. Now is the time when all of last year's faded blossoms must be removed. In pruning out any faded blooms be sure to cut away only the dried blossoms and not the new growth.

ROY S. and GLADYS M. LEIGHTON
(September 1954)

The Species of Lilacs

IN central and western China lilacs are found frequently by the sides of streams, in thickets and woodlands, always in regions where they enjoy an abundance of moisture. The early species have recently been crossed, bringing out some very lovely early hybrids. The same has been done with some of the late blooming species and these resultant hybrids are some of the most beautiful plants we have in our garden.

MRS. F. B. EYLAR
(Spring 1951)

Why Lilacs Don't Bloom

"WHY don't my lilacs bloom?"

1. Planted in too dense shade and loss of moisture and food caused by nearby trees or shrubs and their encroaching roots. 2. Excessive growth of suckers and water sprouts and the neglect of their removal. 3. Failure to remove dead and diseased branches and improper pruning practice. 4. Bushes planted too closely and where air circulation is retarded. 5. Poor drainage and undesirable acid soil condition. 6. Excessive loss of blooming wood in the cutting of bouquets and incorrect methods used. 7. Loss of vitality due to failure in the control of borers, scale or powdery mildew. 8. Bushes still too young, or proper care not given previous to and at time of planting.

reprint from *Florists Review*
(Summer 1945)

Lilacs

THE French lilacs give a season of bloom of a week or two in early May. The advent of a group of early flowering hybrids now classified by botanists as a hybrid species, *hyacinthiflora,* brought to these gardens a week or two of bloom before any of the common lilacs opened. This early flowering group, therefore, is of the greatest importance.

The first variety of this group to become well known in this country was "Lamartine," introduced by Lemoine in 1911. It is a most useful, strong growing variety of soft pinkish lilac color. Lemoine's newer varieties give little variation of color. All of these varieties resulted from the combination of *Syringa vulgaris* with *Syringa oblata* var. *Giraldii.*

In 1917 Wilson found another botanical variety of the species *oblata.* The distribution of this plant was slow but finally gardeners came to realize its great value. One plant breeder, Mr. F. L. Skinner of Dropmore, Manitoba, took it up in earnest and about 1935 introduced the first of the hybrid seedlings resulting in crossing this with *S. vulgaris.*

With the many hundreds of varieties being grown there is still a chance for important study concerning the adaptability of these varieties to different parts of the country. Many groups of late flowering hybrids are now in cultivation. Many of these are superior to the late blooming species. Hybrids between additional species have been made and can be expected to appear in commerce from time to time.

There remains to be considered the latest blooming of all, which are the species grouped by the botanists under the subgenus *Ligustrina,* indicating the close relation to the privets. The flowers come fairly late in June and are useful on account of their lateness. All of them are white.

JOHN C. WISTER
(Summer 1948)

Lilacs at Cedar Hill Nursery

THERE are divergent opinions as to the best methods of propagating. Some authorities insist that growing from cuttings is the only way to propagate. Others still prefer grafting on California privet with careful deep planting to get them on their own roots in two years. Propagating by cuttings in early June requires bottom heat in spite of overhead temperatures. The saddle graft is usually best if the scions are of pencil thickness since the callusing at both ends will more readily produce rootlets than any other form of grafting. It has been observed that those varieties which are good growers propagate reasonably well, while cuttings from slow, sparsely growing plants are more difficult to root, even under the most ideal conditions.

A lime-sulphur or scale-oil spray in early spring against the oyster shell scale is about all they require. The control of the borer is more difficult than would appear in advertisements of control remedies, and periodical inspections and application of a preparation designed to combat these pests are necessary.

JOHN HERGENREDER
(Summer 1948)

A Longer Lilac Season

IN order to extend the blooming season of the lilac and to obtain some improvement of form, the late Dr. W. T. Macoun decided to cross some of the late blooming species which had proven themselves hardy at Ottawa. This work was started in 1920 by Miss Isabella Preston.

The hybrid origin of these seedlings was noticeable and there were many variations within the lot, especially in the size of the inflorescence, a few being quite small, but the majority having much larger panicles than either parent, with a free, open-branching habit. In color they varied from very pale pink, through pinkish-lilac to very deep lilac, in most cases the color of the buds being somewhat darker. The plants themselves differed from the parents. They grew vigorously. The bushes had a round-topped shape and the clean but coarse foliage was attractive. Most of them came into bloom just after the ordinary lilacs faded.

Other desirable characteristics were their extreme hardiness, the unusual pink color of the bloom and their annual floriferous habit, even when growing in poor soil. In addition they appeared to be resistant to disease and insect pests.

D. F. Cameron
(Summer 1948)

The Breeding of Lilacs

A CONSTANT aim has been to increase the size of the individual flowers. Efforts along this line have been quite successful because while only a few years back those with individual flowers one inch across were usually described as "huge," "enormous," etc., it now is quite common to find them 1¼ inches wide with a maximum to date of a full 1½ inches. The hope of getting pure pinks has been definitely attained in two varieties.

Walter V. Clarke
(Summer 1948)

Lilac Time

THOSE who think that purple and white is the range of color in which lilacs are found will be amazed to learn that they also come tinted in pink, blue, reddish purple and cream. Each of these, in turn, is found in a variety of forms, singles and doubles, large spikes and small, dense heads of flowers and loose lacy forms—every one more stunning than the next.

C. W. Caldwell
(Summer 1948)

Woodland Park Rose Garden

THE Municipal Rose Garden, operated and maintained as a public service by the Seattle Park Department, had its original inception in January 1922. The location of this garden was a very fortunate one, as the site combined the advantages of good air circulation, sunshine and a good clay loam of considerable depth well adapted to rose growing.

In 1946 the Board of Park Commissioners were asked by All-American Rose Selections, Inc., to establish a National Test Garden in the Municipal Rose Garden and at the same time the Seattle Rose Society requested a test plot for the American Rose Society. These requests were favorably received by the Park Board.

The reaction of the public to a garden of this type has been very gratifying and all through the blooming season hundreds of people will be seen comparing the new roses and taking notes on what they would like in their own rose plots.

Adrian Gallaher
(Summer 1951)

The Director, Mr. B. O. Mulligan, is leaving by air in mid-July for an extensive tour of arboreta, botanical gardens, horticultural research stations and some of the more important private gardens and nurseries in Great Britain, N. France, Belgium and Holland. Similar institutions in the United States and Canada will also be visited en route.

New or Unusual Plants in the Arboretum

J. A. Witt

Ceanothus impressus 'Puget Blue'*

TRUE blue flowers are rare in trees and shrubs, in fact so uncommon that many lavender and violet colored flowers are called blue. Among the real blues the Ceanothus stand foremost with a range of color from the soft powder blue of the Point Reyes creeper, *Ceanothus gloriosus,* to the vivid sky blue of *C. griseus.* This Arboretum has been collecting these exciting shrubs almost since its inception and growing them with varying degrees of success. Mrs. Lester Rowntree of Carmel, California, supplied us with seeds of some twenty-five species and varieties of *Ceanothus* in 1945 as part of this program. Sad to state only two of these still remain—a large plant of *C. papillosus* on the south side of the greenhouse, now about eight feet tall, and *C. impressus* 'Puget Blue,' the subject of these notes.

'Puget Blue' actually started life under an assumed name, *Ceanothus papillosus* var. *Roweanus,* and was known by that epithet until 1955 or 1956 when its beauty and popularity suggested that it be examined more critically. Unfortunately, close scrutiny of our plant revealed that it was not *C. papillosus* but probably related to the Santa Barbara Ceanothus, *C. impressus.* We were unable to name it for certain until a specimen had been sent to Dr. Malcom A. Nobs of the Carnegie Institution at Stanford, California, who wrote in part ". . . (it) falls well within the natural variation pattern of *C. impressus* Trel." He further suggested that a clonal name might be in order. This suggestion was repeated from several other sources, notably Mr. Percy Everett of Rancho Santa Ana Botanic Garden, Claremont, California, who has been growing it since 1956 and considers it a very fine form, certainly worthy of naming. In casting about for a name we first wished to honor Mrs. Rowntree but found that there was already a *Ceanothus* 'Lester Rowntree',* so to avoid duplication we chose 'Puget Blue' as suggesting both its beautiful color and its origin so near to Puget Sound.

Below is a description of this outstanding plant as it has been growing with us since 1945.

Ceanothus impressus Trel. 'Puget Blue'

Habit—Stiffly upright shrub with spreading branchlets, becoming 8 or 9 feet tall, or more if grown against a wall. The terete young stems, covered with a downy tomentum, are green, often with one side purplish-red.

Leaves—Persistent, from 3/8 to 7/8 inch long and 1/8 to 1/4 inch broad on flowering shoots, longer, to 1 inch, on the sterile shoots; elliptic to elliptic-obovate, obtuse to acute, tapering shortly to a broadly cuneate base. The upper surface is shining dark green, covered with short hairs, and with gland-tipped papillae towards the recurved and serrulate margins. The underside is clothed with a thick tomentum of gray hairs.

Inflorescence—A short sub-globose raceme of 18 to 25 flowers borne in the leaf axils at the tips of the new shoots. The racemes are from 1/2 to 7/8 inch long and 1/2 to 3/4 inch across, crowded in groups of 2 to 5 giving the effect of an interrupted umbel. The flower buds are rufous-brown to rosy purple, each bud scale subtending a floret, making the expanding buds very showy. The flowers are small, about 1/4 inch in diameter, Gentian blue (H.C.C.42/1) with a deeper blue-purple style and yellow anthers on pale blue filaments.

The flowers are fragrant, somewhat reminiscent of Buddleias, attractive to some, too cloying for others. It is a favorite of the honey bee, who fairly makes the bushes buzz on warm days, a distinct hazard to the promiscuous flower sniffer. The flowering period

*Propagated and named by Mr. L. L. Edmunds of Danville, California.

normally starts in mid-April and continues for several weeks.

The swollen and half open flower buds are most attractive with their rosy bud-scales contrasting with the bright blue of the opened flowers; its bright green leaves and rather stiff habit make the shrub texturally interesting during the winter months.

Ceanothus 'Puget Blue' is not entirely hardy in the Seattle area and should be grown in a somewhat protected situation. Those doing the best of the Arboretum's plants are against the south or west side of a building in soil with perfect drainage. Even so, the parent plant was killed in 1955 and several young rooted cuttings planted in the exposed Ceanothus collection here have perished due to cold. 'Puget Blue' roots easily from cuttings taken in late July and inserted in sand with bottom heat. Rooted cuttings have been distributed to the National Arboretum, Washington, D. C.; to the Rancho Santa Ana Botanic Garden, Claremont, California, as well as to several Washington State nurserymen. We hope that it will become more generally available now that it has a name, for it is certainly a plant worthy of increased popularity.

BELOW:
Ceanothus impressus 'Puget Blue'
FIG. 6 PHOTO BY: WM. ENG.

Penstemon Gardens

(Continued from Page 56)

rock garden was sprayed in July 1959 with weed killer to kill the horse-tail, brambles, and quack grass. In September the first plants were set out followed by others in March and April of this year. Other plants, notably junipers, have been incorporated with the penstemons and we hope in time to bring this long neglected area up to its full potential. This May a few flowers appeared on many of the plants giving us a foretaste of what will be in years to come one of the very colorful displays in the Arboretum.

J. A. WITT

The Importance of Public Plant Collections

John C. Wider*

PROFESSOR DAVID PIMENTEL, of Cornell University, has written in the Autumn 1959 *Cornell Plantations* a comprehensive article dealing with the interdependence of plant and animal life in nature. He has stressed the fact that the human race itself is not an exception to this interdependence and that ecologists and naturalists must work towards a more thorough understanding and appreciation of the existing balance of nature. He emphasizes that survival in the future depends to a large extent on the successful co-existence with nature.

What can the AABGA do to bring about this "more thorough understanding" on the part of the public in general and governmental officials and educators in particular?

The institutions which make up the AAB GA have many problems springing from the present lack of this understanding. Officials of botanical gardens and arboretums (as well as administrators of public parks, forests, nature reservations, etc.) tell us about the difficulty of running these various institutions because of the lack of sufficient funds. Those making this complaint quite honestly believe that this lack of money is the cause of all their problems.

It is quite true that in nearly all such institutions there is lack of sufficient money. I have, however, come to the conclusion that this lack of money is not the real cause of the present problems and difficulties in any of these institutions. In fact, I believe it is not a cause at all but rather a result, *the result* of something much deeper and more fundamental; namely, a lack of comprehension on the part of the governing authorities and of the general public of the real and the important place these institutions and their plant collections should have in their own communities and in the surrounding areas.

In this industrial and mechanical age the growing of trees, shrubs, flowers, fruits and vegetables is often the only contact that our present day citizens have with nature. It is the greatest, if not the only, opportunity for most people to get the spiritual satisfaction of working with and trying to understand nature. The study of the science and art of horticulture is endless. It touches upon such sciences as botany, geology, soil chemistry and climatology. It brings an awareness of the importance of bird life, of insects, fungi and bacteria. In a small way, it illustrates the problems of soil and water conservation, flood control, forest fires, and dust bowls of world-wide significance.

In addition to its scientific aspects, horticulture is a cultural art. It should be fostered as much by those entrusted with the task of educating youth in its formative years as music, literature, poetry, painting, sculpture and drama. Governmental officials and school and college authorities have failed to realize this. They apparently do not comprehend the educational and cultural significance of the interest in gardening in this modern age.

The present day lack of reverence for nature and for the beauty of the natural landscape and its vegetation and wild life is tragic. National parks are constantly threatened by commercial interests wishing to construct dams, build highways or conduct undesirable types of amusement parks.

The finest farm lands and orchards near some of the great cities are wiped out by real estate developments. Super-highways are cut through the finest scenic areas and through parks, botanical gardens and arboretums by engineers who consider all these waste lands because they have not been built upon. Sometimes by slight readjustments of plans, these could have been spared and alternate routes chosen, but usually there

(Continued on Page 81)

*Director, Arthur Hoyt Scott Horticultural Foundation, Swarthmore College, Swarthmore, Pa. Reprinted by permission of the author from the *Quarterly News Letter*, No. 42, Jan. 1960, of the American Association of Botanical Gardens and Arboretums.

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Special Notice

To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears will be dropped and THE BULLETIN will be discontinued.

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I hereby apply for membership in the Arboretum Foundation and remittance for same is enclosed to cover dues for the next succeeding 12 months.

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All memberships are non-assessable.

Our New Japanese Garden

SUNDAY, JUNE 5, 1960, was a red-letter day in the history of the Arboretum. That afternoon saw the dedication of the Japanese Garden which had been constructed during the previous three months by the Yorozu Gardening Co. of Seattle, working under the daily supervision of Mr. Juki Iida, landscape architect of Tokyo, and for part of the time also with the assistance of Mr. N. Kitamura from Tokyo.

This magnificent and unique addition to the Arboretum's existing features was made possible through the generosity of one anonymous individual and his wife, residents of this area, who have borne the major part of the costs of the project. To them the Arboretum, the University, the City of Seattle and its citizens, and all our numerous visitors will be forever greatly indebted. In addition notable contributions were made by the City of Seattle, which provided funds for the surrounding fence and a new sidewalk, the Arboretum Foundation, the National Bank of Commerce, City Light, and many other interested local firms and individuals.

First, its size of three acres is remarkable; that it was built-up from an almost undeveloped and generally flat area (save at the south end) in this space of time to a genuine Japanese garden, using local stone and plants from the Arboretum or local nurseries is also astonishing. As a matter of fact it is hard for those who knew the site well previously to recognize it now; after three or four years growth of the trees and shrubs it will be an entirely new and distinct entity, beautiful from early spring to late fall, and by no means without interest in the winter months. The combination of traditional Japanese ideas and features with northwestern American materials and plants, as well as some from other regions of the world, will ensure this.

The site is near the southwest corner of the Arboretum, west of Lake Washington Boulevard, surrounding an elongated artificial lake about one-third of an acre in extent (which was considerably altered in outline

and depth during construction) and centers on the tea-house given in March 1959 by the City of Tokyo to Seattle, which occupies a slightly raised site near the southwest end of the lake and is now surrounded by a box-wood hedge. To the south of the tea-house is the high mountain region, on which grow spruces, pines, and maples, and where is placed a large stone pagoda; from it descends a waterfall, becoming a stream flowing down a rocky bed to the lake beneath Japanese maple trees and amongst azaleas, ferns and junipers.

Both banks of the lake are planted almost continuously in irregular pattern, except for the crossings by stepping stones to the tea-house at the south end and over the two bridges near the center; for these an island was built in the lake and another slightly north of it. About midway on the west side a bed of Japanese iris *(Iris Kaempferi)* will provide color in mid-summer to follow the azaleas and rhododendrons, with a moon-viewing platform to the north, while a considerable area between the lake and the western boundary is planted with young cherry trees donated by the Japanese Community Service. From the eastern shore projects a stone-covered cape, terminated by a small stone lantern and planted with several *Pinus mugo.*

At the north end a harbor area is surrounded by a paved walk and backed by a solid stone wall, above which is planted *Rhododendron (Azalea) arnoldianum,* a bright splash of color in mid to late May. On the hillside beyond is a large stone lantern, from Kobe, overlooking the whole garden. The principal entrance gate, built by K. Ishimitsu & Sons, is near the northeast corner on Lake Washington Boulevard, facing the southern end of Azalea Way. Parking areas are available south of the garden by the Madison St. Playfield, north of it between Azalea Way and the Boulevard.

B. O. M.

Clarence Prentice Memorial Planting

A new grouping of rhododendrons and other associated plants now enriches the steep banks at the head of Rhododendron Glen. Given by his family in memory of the late Mr. Clarence Prentice it occupies a prominent position where the path curves around the Glen, amongst the large rocks originally placed 1936-38.

Dominating the planting, which was designed by Mr. Raymond Prentice and carried out by the Prentice Nursery & Decorating Co. of Seattle, are large specimens of *Rhododendron auriculatum,* two of the Morgan hybrids from Hoquiam, Washington, of 'Bow Bells' and 'James Barto,' another hybrid of *R. Williamsianum.*

On the slopes are younger plants of 'Olympic Lady,' 'Broughtonii Aureum,' 'Elizabeth.' the white *R. mucronatum* and other rhododendrons, with several examples of *Pieris japonica* and some spreading types of yews amongst them. For ground covers there are large numbers of *Azalea* 'Flame Creeper,' *Gaultheria procumbens* and the white heather 'Springwood.' All the plants were supplied by the Prentice Nursery Co.

The Arboretum is certainly most appreciative of this generous gift in memory of one of Seattle's most prominent and respected nurserymen, a gift which will increase in size and worth as the plants grow to maturity in their new location.

The Laburnums are among our most beautiful flowering trees. Their popular name is "Golden Rain." *L. Vossii* is a hybrid between *L. anagyroides (vulgare)* and *L. alpinum.* The yellow racemes of *L. Vossii* are much longer than those in the common type *L. vulgare* we generally see and the tree has a lacy, delicate, very desirable manner of growth.

ARBORETUM NOTEBOOK

This section is particularly designed for notes, information and queries concerning beautiful or unusual plants from growers of all types or experience. We solicit your remarks and ideas, but space limitations may sometimes restrict us to publishing those of the widest interest.

DAVIDIA

OCCASIONALLY one sees a tree or plant so beautiful and so unusual that curiosity about where it came from and how it got here is all consuming. This happened to me when I saw a tree called *Davidia involucrata*. I was sure that this was not its native home. Who brought this rare, exotic looking tree here?

Davidia came from the province of Yunnan in China, as did so many of our beautiful foreign trees, shrubs and plants. The discovery of Davidia, and how it reached America and eventually Seattle, is a dramatic story.

In the year 1899, a twenty-four-year-old Englishman, Ernest H. Wilson, was commissioned by the firm of Messrs. Veitch and Sons in London to go to China with the sole purpose of procuring seeds of a tree reported to be the most beautiful tree in the whole world. His expenses were to cover a three-year journey of discovery and he was to "stick to the one thing you are after and do not spend time and money wandering about."

Mr. Wilson left England at once and arrived in Hong Kong in the midst of an epidemic of bubonic plague. His immediate objective was to locate Dr. Augustine Henry, a botanist who had sent seeds of *Lilium Henryi* to England and whose headquarters were at Szemao in Yunnan. Dr. Henry had seen only one tree of Davidia and he sketched for Mr. Wilson a tract of land about the size of New York State. Somewhere in this area, in a high mountain location near the Yangtse River, Dr. Henry believed that this tree grew.

Mr. Wilson could speak no Chinese, but he was able to hire two dubious characters that might be of help to him. He was furnished a guard of twenty armed Chinese soldiers to lead him through the race riots he was bound to encounter.

They began their journey ascending the Yangtse River through frightening rapids and areas where hundreds of Chinese had been brutally murdered. At long last they found the house near which Pere David, the French priest, had discovered the Davidia tree. Near the house was a stump of the tree, all that remained of the tree that Dr. Henry had seen. Mr. Wilson, bitterly disappointed, in his diary simply wrote that he "did not sleep that night." However, he decided to collect other plants while working toward an area where Pere David had discovered the first Davidia in 1869.

After about a month of collecting, to his astonishment, he happened upon a Davidia in full flower. It was about fifty feet tall, pyramidal in outline, with a "wealth of blooms more beautiful than words can portray."

The Davidia has much the same manner of flowering as our dogwood trees. The true flowers are in an inconspicuous group, but there are two large, unique, white, boat-shaped bracts that hang from the clusters of true blooms like wings and give the tree the familiar name of "Dove Tree."

For years there was a beautiful specimen of Davidia in Volunteer Park until the heavy frost in November of 1955. This, however, should not deter one from planting this tree as hardier trees than Davidia were killed that year.

G.T.D.

ROBINIA

A few years ago, while visiting in St. Louis, I noticed that many of the streets were bordered with a fairly small tree which had drooping grape-like clusters of clear pink flowers. The leaf had the locust leaf pattern, but with more substance. The black locust that grew in the West had thin, delicate leaflets.

It took perseverance to find the name of

the tree; no one seemed to know what it was called, but all were appreciative of its beauty. At last I learned that it was *Robinia hispida*. They told me at the Botanical Garden that they had found this to be the best of all tree species for their purpose.

I immediately could see it in a small garden where a large tree would be out of place. It seldom grows higher than 10 or 12 feet and it is often used as a shrub in a sunny corner.

The leaves of deep green are scanty, allowing each flower to be seen. These flowers are a beautiful soft pink, in pendent racemes; each flowerlet along the stem is large, of good substance and loosely borne. The trees blossom freely in June and July. Perhaps there is no more beautiful tree at that time of the year.

There are several varieties of "Rose Acacia" *(Robinia)*. *R. hispida* can be easily recognized by reddish hairs on the young growths.

This is a precious tree with fine verdure and may be planted in groups. It is happy in most soils. It grows well in poor, dry places. It probably does best in warm, light, sandy soils. However, if it is pampered with a rich diet, it may sucker to some extent.

The name Robinia comes from two herbalists to the King of France in the sixteenth and seventeenth centuries, Jean and Vespasien Robin. It belongs to the Leguminoseae family.

G.T.D.

"In all the lovely flora of China and Japan there is no plant the grace of which has been a greater source of inspiration to the poet than bamboo. Not only the beauty but the extraordinary usefulness of the bamboo has become proverbial. And so it is said, 'You may eat your meals without meat, but you cannot live without bamboo.' "

* * *

"There is no art or occupation comparable to planting. It is full of past, present and future enjoyment."

Sir Walter Scott

Cornus canadensis, the little creeping dogwood found in our woods, is perhaps the most charming and beloved of all the dogwoods, and if given proper conditions, leafmold, moisture, shade and drainage, can be easily grown in a small garden.

M.T.

(Summer 1947)

Phlox adsurgens has the reputation of being extremely difficult to grow. I have found it extremely easy. I grow it in a deeply prepared soil containing a high percentage of alder leaf mold, some old manure and, to give a touch of acidity, a generous measure of chopped fern roots. The result is large mats of robust plants. I have never attempted to gather seeds, but cuttings taken in September root readily.

"X"

(Summer 1947)

Primula Florindae grows beautifully in my garden with its great mops of fragrant yellow blooms on three-foot-high stems.

G.T.D.

(Summer 1948)

Spiraea bullata is a charming dwarf shrub, 18 inches tall and often 18 inches wide when fully grown. The flowers, in July and August, are a nice, deep rose color in crowded little bunches. Its leaves are dark green on the upper side and gray underneath, interestingly crinkled. These shrubs are fine to use in rock gardens or among dwarf rhododendrons. A little yearly pruning, merely snipping, keeps it low. It may be propagated by short cuttings taken in August.

(Summer 1948)

Remember when you plant bulbs this fall that the hole you dig must be flattened out on the bottom and not V-shaped. The base of the bulb should rest against the soil below it; it should not be suspended above an air pocket.

(September 1942)

A little-used broad-leaved species which gives good texture harmony with the larger rhododendrons is *Mahonia Bealii.* Its large inflorescence of soft yellow flowers is quite attractive, too.

(March 1944)

BOOK REVIEWS

The Rhododendron and Camellia Yearbook, 1960. Royal Horticultural Society; (London, 1959). Price $2, post free.

THE 1960 Yearbook has a number of very interesting articles, particularly for those of us here on the West Coast.

Perhaps the most interesting is the Symposium on "Aims in Breeding Rhododendrons," by a number of well known British plantsmen.

Almost every one of them has a different viewpoint as to what he is trying to do, but each has had good results in his own way. The most controversial subject seems to be the use of *R. yakusimanum* as a parent. Some claim good results, others not, but I think it will be a long time before anything is definitely settled.

R. yakusimanum is a very striking plant, with fine foliage, and an interesting although rather small, white flower, pale pink in bud, but I doubt that it is going to supplant everything else in the rhododendron world, as some enthusiasts have claimed. I have seen a few hybrids from it, and they have been of an indefinite color so far, but perhaps about two more generations will clear that up.

There are articles on rhododendron breeding by Lord Aberconway, Francis Hanger, Edmond de Rothschild, and many others, from whose gardens most of our new rhododendrons have come.

The opening article is an account of the rhododendrons at Glenarn, Scotland, where there are a number of very old species and hybrids.

There is a short history of the A.R.S. Test Garden in Portland, and another description of rhododendrons in the Edinburgh Botanic Gardens.

Rhododendrons in New Zealand are mentioned, and there is an interesting "Beginner's Guide," with a number of questions and answers on rhododendron problems.

There are articles on the shows in England and in Seattle and Tacoma; on plants at Caerhays, Cornwall; several articles on camellias in different parts of the world; and a history of a number of named camellias, which are really in a muddle.

A list of camellias and rhododendrons which have received awards in 1959, and many beautiful photographs complete a well rounded Yearbook.

L.E.B.

The Lily Year Book 1960. Conference Number. Published by The Royal Horticultural Society, Vincent Square, London, S.W. 1, England. Price $2.25, post free U.S.A.

THIS BOOK is sponsored by the Lily Group, an organization within the Royal Horticultural Society. This group, formed in 1932, has produced a Lily Year Book annually except for the war years.

To me this book has three particular merits. *First,* it reports fully the Third Lily Conference which was held in London July 7-10, 1959. (The first was in 1901 and the second in 1933.) Visitors were there from the U.S.A., Canada, Australia, Japan, Holland, Germany and other countries. Representative lily growers presented papers that reflect the advances in lily culture in their various countries. These are printed in this Year Book with the discussions that followed each.

Second, this book is dedicated to Dr. S. M. Emsweller whose likeness appears on the frontispiece. At the annual dinner the Lyttel Cup was presented to Dr. Emsweller for his valuable work for lilies which he has been doing at Beltsville, Maryland. This is the first time that this honor has come to an American. Dr. Emsweller is Head of Ornamentals Section, Agricultural Research Service, U.S. Dept. of Agriculture. He visits Puget Sound frequently and keeps in close touch with the lily growers of this region. The subject of his paper for the Lily Conference was "Research on Lilies in the United States." He discussed the production of lilies, both species and hybrids, in a manner that left no doubt that we are far ahead of the rest of the world in the science of lily growing.

Third, the cover illustration shows the hybrid lily, "Limelight," in color. This lily originated at the Oregon Bulb Farms. This firm shipped blooms from Oregon to the show and Mr. de Graaff spoke on their hybridization and growing program. He showed pictures to substantiate their claim of "The largest lily farm in the world." These, with "Lilies in Canada" presented by Sandy Best and Dan Cameron, give the book a distinctly American flavor.

The Lily Group Conference also gave some time to Fritillaries, Nomocharis and Eremurus —attractive relatives of the lilies, and there are reports of visits to various gardens and estates.

Eight color plates and twenty black and white illustrations make a well-balanced book that is well worth reading.

C. L. SHRIDE

Nederlandse Dendrologie, by Dr. B. K. Boom, l.i., vierde druk (fourth edition). Published by H. Veenman & Zonen N.V., Wageningen (1959). 480 pp., 134 illustrations. Price 42.50 guilders ($10.50).

IN reviewing Dr. Boom's book, the present author feels inclined to quote that ancient Dutch proverb: "Goede wijn behoeft geen krans"—good wine needs no praise or propaganda, it speaks for itself. The fact that it was necessary to publish four editions of this work within a relatively short span of years is sufficient evidence for its high quality and usefulness. Indeed, if any criticism should be leveled against Boom's book, perhaps it should be in the form of the regretful statement that it is written in Dutch, which after all is only a minor language on this planet. The circumstance that the book is concerned with trees and shrubs grown in the Netherlands is, of course, not serious, since an overwhelming majority of these plants are also cultivated in other temperate regions; the language barrier, therefore —formidable though it may be—seems to be the only thing standing in the way of an almost universal acceptance, and it is indeed to be hoped that ways and means to eliminate it may be found!

As the author states in his introduction, the structure of the work is that of a flora, so that the name of any woody plant or shrub found in

the Netherlands can be determined with the aid of a key. The characters used in the latter have been chosen in such a way that even persons not too well versed in botany can use it successfully. Furthermore, a serious effort has been made to make the key independent of the seasons—this in contrast to many other dendrology books which rely heavily, and perhaps too heavily, upon characteristics of flowers and fruits. However, in view of the fact that floral characteristics indubitably are more constant and reliable than vegetative ones, *two* keys are given for various genera, and a single one (using generative characters) for *Berberis, Rosa, Rhododendron* and a few others where a "vegetative" key would be useless. In addition, the author has included a key based on winter characteristics. Although the book includes many rarely-seen plants, the number of hybrids produced by plant breeders (e.g., roses and rhododendrons) has deliberately been curtailed. This must be considered a wise move in view of the continuous and rapid change in the array of commercially available forms, which tends to render fruitless any effort to keep a dendrology book up-to-date. After all, information on commercial hybrids can (and should) be obtained from the catalogues of plant breeders!

In comparison with former editions, considerable changes in names have been introduced; the underlying philosophy and principles are explained in an attractive, concise chapter on nomenclature. As was done in the third edition, the year in which a plant was first taken into cultivation is always stated. Anglo-Saxon readers will be struck by the many disagreements with Rehder, usually considered to be an authoritative source in this field; however, close inspection of Rehder's data by Boom has revealed so many errors that the latter author felt obliged to ferret out the necessary information himself in the majority of the cases. Boom's data are thus to be preferred. In those cases where the exact year is not known, Boom has recorded the year in which a species or variety was mentioned as a cultivated plant for the first time.

It has to be emphasized that the book is, first and foremost, a taxonomic work on flora; those who seek information on methods of cultivation, demands upon soil, or esthetic significance of the plants dealt with, are thus bound to be disappointed. Nevertheless, the present reviewer is of the opinion that Boom's book, beautifully illustrated by the author himself, will prove of extreme value not only to teachers and students at schools of forestry or horticulture, but also to landscape architects, plant breeders and (last, not least) to gardeners pure and simple.

B. J. D. MEEUSE

Japanese Gardens for Today, by David H. Engel. Published by Charles E. Tuttle Company, Rutland, Vermont; Tokyo, Japan. First Edition, 1959; price $15.00.

DAVID ENGEL'S *Japanese Gardens for Today* is close to the ultimate in twentieth century book production. Physically, it is a beautiful book and worthy to be among other handsome volumes published by the Charles E. Tuttle Company. The illustrations are many and of high quality, but this book goes far beyond its attractive appearance.

This is a practical book. It is not just a portrayal of Japanese gardens since it shows us how to use this ancient art form in our own setting. Richard Neutra, who writes the foreword, says; "Japanese towns, villages, houses, and gardens are often miracles of land economy, brought about both out of necessity and from a general sense of thrift." He says that Mr. Engel gives us much more than a glimpse of the 'humanized naturalism' of the Japanese landscape, a landscape that proves that even a tightly massed civilization need not spell the defilement of the natural scene, but, in fact, can mean its glorification."

There is a plant list which should be very helpful to those among us who favor the do-it-yourself approach, and a wonderful chapter on plant care and pruning that tells us how to coax our own shrubs and trees into those sculptured forms we admire in Japanese plantings. There is no urging us to copy these oriental gardens, the thesis being that if we can understand the reason why they are as they are, we may be able to build our own gardens with the same appreciation for simplicity, harmony, strength, and delicacy that is inherent in Japanese garden design.

It matters not what your personal taste may be—*Japanese Gardens for Today* will be an enriching experience. Mr. Engel never forgets the needs of today's American gardener; his aim has been "to discover the best in Japanese garden design, which is also valid and relevant for gardens in the West."

Incidentally, this book will give Seattle area readers a glimpse of what Mr. Juki Iida, the landscape designer in charge of the project, is working toward in the new Japanese Tea Garden, here in the University of Washington Arboretum.

PAT BALLARD

How to Grow Roses, by John Paul Edwards and Sunset Editorial Staff. *Lawn and Ground Cover Book*, by Sunset Editorial Staff. Both published April 1960; price $1.75 each.

SUNSET MAGAZINE has very recently published two garden books which contain material of value to many gardeners. One is a lawn book and contains detailed information about making and maintaining a lawn; the other is a book on rose growing.

The *Lawn and Ground Cover Book* covers the subject from the first chapter called "Why Have a Lawn" to the last chapter which includes a chart listing over one hundred ground covers that may be possible for lawn. In other chapters there is information covering every possible detail of lawn care from Spring to Fall.

The Rose book *(How to Grow Roses)* has fine color plates of popular roses.

The Chapter on "How to use Roses in Your Garden" has many happy suggestions and another gives detailed directions about how to grow roses in containers. The subjects of pests and diseases are fully covered and there are practical directions for combating diseases. A chapter on pruning and training will be valuable to the novice.

Any gardener will find in these books helpful suggestions.

G. T. D.

European Pine Shoot Moth

Control Recommendations

A new insect pest of pine was found in the Pacific Northwest in 1959. It is the European pine shoot moth, an insect capable of causing serious damage to pines, both ornamental and native.

In so far as is presently known, it is limited to certain ornamental plantings and nurseries in the Seattle-Tacoma area. Infestations have been found scattered from Puget Sound to as far east as Bellevue and from Lake City to Tacoma.

The larvae will attack all pines although it prefers Mugho, Red, Scotch and Austrian pines. The presence of the larvae in the buds is indicated by an oozing of pitch and by dead needles at the tips of branches. Later the larvae mine the shoots (or candles) causing them to wilt or turn downward. Some shoots will die and some make a recovery but usually show a distortion. Mugho pine heavily infested often will show no new bud growth.

It is suggested that residents carefully inspect all pines on their property for injury to the new growth. Residents of King and Pierce Counties should prepare to apply DDT sprays for the protection of pines even though no injury is evident as shoot moth infestations have been found in this area.

Moths will be active and laying their eggs during the latter part of June and early July. Sprays applied during this period are primarily for the destruction of larvae that hatch from these eggs.

Prepare the spray as follows:

1 pound of 50% wettable DDT to 25 gallons of water. In smaller quantities use 2 tablespoons of the 50% wettable DDT to a gallon of water.

Keep the spray mixture agitated when using as the DDT powder has a tendency to settle out. When applying, be sure to direct the spray into the plant from above in order that the material will reach the base of all needles.

It is requested that the first application of the spray be made about June 20th. A second application should be applied in 10 days to 2 weeks following the first application.

Information prepared by Northwest Pest Action Council.

European Pine Shoot Moth Committee

Dr. E. P. Breakey, W.W.E.S.
Ed Lewis, Arboretum Foundation Units
Geo. W. Eade, State Dept. of Agriculture
(Chairman)

June 1960

The seeds of all varieties of *Erythronium* should be collected when ripe and sown at once about half an inch deep in sandy soil.

Occasionally they germinate at once but generally they wait until the following spring when they look like blades of grass. They seldom flower until they are three years old.

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The Importance of Public Plant Collections

(Continued from Page 73)

would have been extra costs which those in authority were not willing to authorize because they did not comprehend or appreciate the true value of the landscape and the plants they were destroying.

There have been other manifestations of the lack of appreciation of the educational value of living plant collections. Some AABGA member institutions have concentrated so much of their attention upon the indoor work of herbarium, laboratory, or library that the outdoor plant collections have not been kept complete and in good condition.

Great foundations have given grants for botanical exploration or for microscopic studies, but as far as I have been able to learn, never for the purpose of improving existing living plant collections, or for the establishment of complete new collections of flowering trees such as Magnolias, Cherries, Apples or of flowering shrubs like Lilacs, Viburnums, Rhododendrons and Azaleas, not to mention important herbaceous plants like Iris, Peonies and Daylilies.

No one disputes that most of the projects for which the foundations have given money have been worthy. The point I wish to make is that help to living plant collections could be just as worthy. These living plant collections in the various great public gardens across the country have been a source of both information and inspiration to countless persons and sometimes to generations of persons.

This has benefited the persons concerned, but more than that the country and the world have benefited because these individuals have received some understanding of nature that they did not have before.

What can the AABGA do to bring greater realization of these facts and an understanding that its member institutions, through their living plant collections, are performing a public service which deserves much greater public recognition and support?

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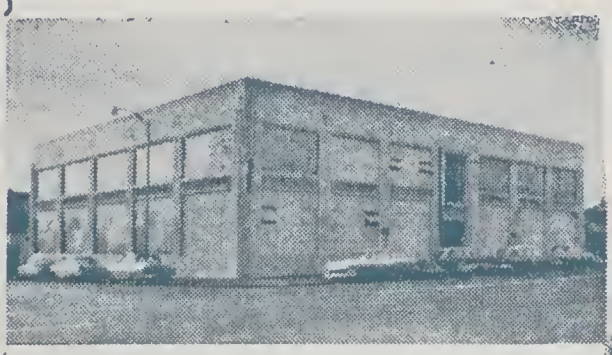

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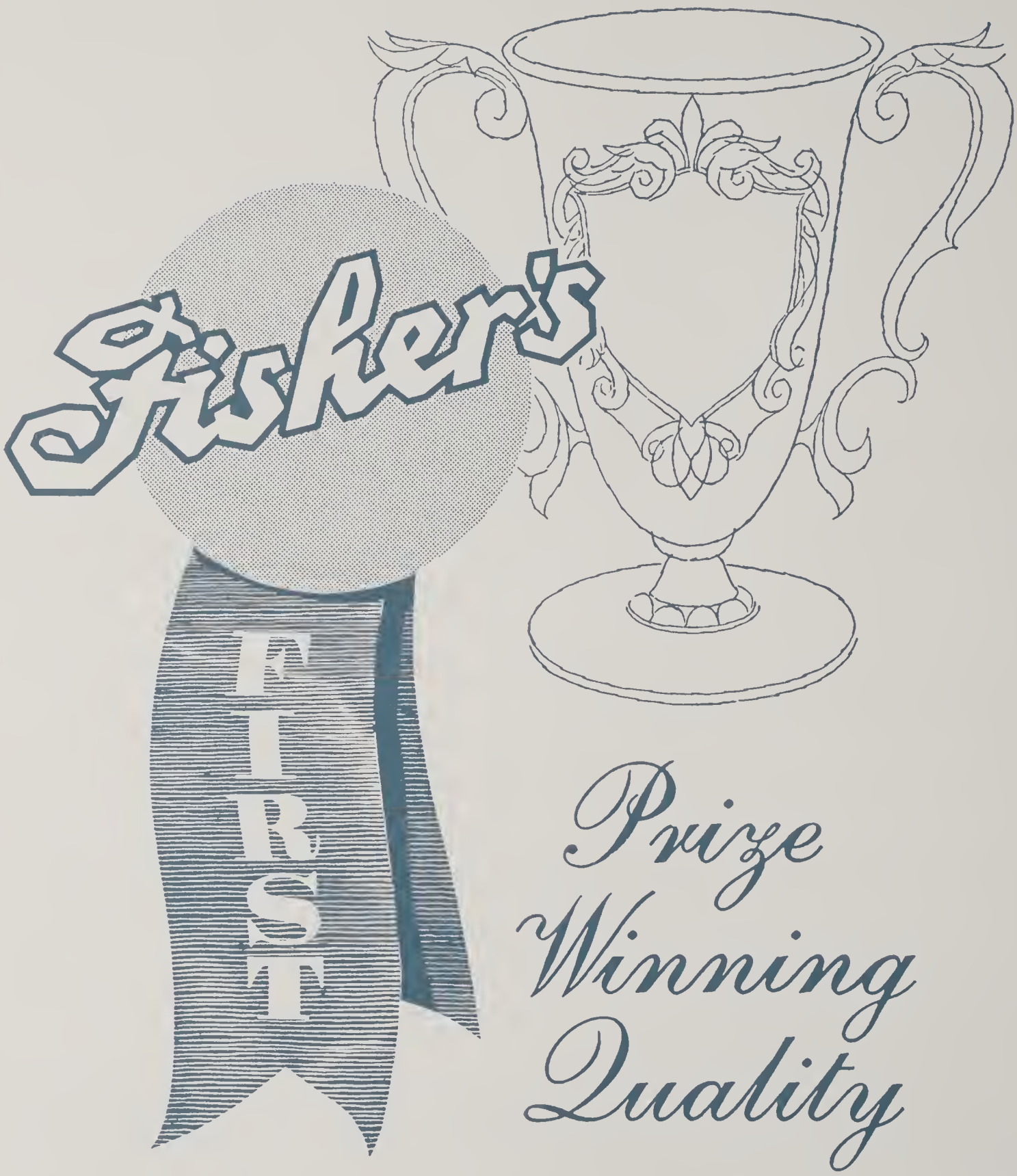

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